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ABSTRACT OF

Presidential Address

ON

SOME LARYNGOLOGICAL, RHINOLOGICAL, AND OTOLOGICAL EXPERIENCES.

Delivered before the British Laryngological, Rhinological, and Otological Association on March 11th, 1904.

BY JOHN BARK, F.R.C.S. EDIN.,

HONORARY SURGEON, THROAT AND EAR DEPARTMENT, STANLEY HOSPITAL, LIVERPOOL, ETC.

[AFTER a few introductory remarks Mr. Bark referred to the fact that his early professional experience had been gained in general practice and that he had also spent much time as surgeon to a general hospital, which double experience had been of great use to him in his special work. He continued:—]

In those days, at any rate in the provinces, our specialty had no existence, and all that was done for the diseases which we now treat was done by the general surgeon or physician, except perhaps "aural surgery," and that chiefly consisted in syringing the ears, twisting out polypi, the occasional use of the Politzer or Eustachian catheter, or in the making of a Wilde's incision and was done by the ophthalmologists. True, the laryngoscope was well enough known but scarcely any but a few advanced physicians used it. I well remember how in my young days it was quite customary to prepare the patient for several days with good big doses of bromide for a laryngoscopic examination. The eye, of course, was commonly enough looked into but, strange to say, no one looked into the nose. It was strongly instilled into me that the best way to examine the nose was to make a digital examination with the little finger. I have thought, having no scientific discoveries or special work to bring forward as the subject of this address, that I could not do better than to place before you some of the experiences through which I have passed and the conclusions which I have come to in my 20 years of work. I cannot, of course, deal with everything but I trust that the following *résumé* will not be out of place.

[Mr. Bark then referred to the enormous advances which had been made in the treatment of diseases of the nose and throat through the introduction of cocaine. The solution used must be fresh and in strength from 5 to 20 per cent. For the removal of most nasal polypi he preferred the cold wire snare, but in the case of a large polypus filling the posterior choana or the naso-pharynx he used forceps guided by the finger. In turbinectomy or operations on the septum severe hæmorrhage sometimes occurred. This should be checked by plugging and the adrenalin solution was also useful at the time of operation. Deviations of the septum were best treated by Asch's operation or its modifications. For ethmoidal suppuration he punched away the ethmoidal cells with Hartmann's conchotome and had had good results. Mr. Bark continued:—]

In frontal sinus suppuration I first remove the anterior end of the middle turbinal in the hope, which is frequently realised, that this may free the fronto-nasal passage and secure efficient drainage of the sinus. When this is not successful I trephine the sinus and, after removing any obstructions, make a large opening through the floor into the nose, clean out with hydrogen peroxide, plug with antiseptic gauze, bringing the end out through the nose, and then close the external incision. The packing is removed through the nose on the second day. I desire here to express my great indebtedness to Mr. Mayo Collier from whose work on the "Surgery of the Frontal Sinus" we have learnt so much.

More exact clinical observation and improved methods of examination have brought many more cases of antral disease under our notice than was formerly the case. The so-called "latent" empyema can scarcely be any longer regarded as latent, its symptoms being so well understood and the examination of the antrum being so easily made. Still, just as one is never absolutely sure that there is pus in a chest until one has explored it with a needle, so it is essential before operating for maxillary sinus suppuration to introduce a trocar. I use a Lichtwitz trocar and perforate the inner wall through the inferior meatus. To drain I always operate through the canine fossa in the following way. I use a specially shaped shouldered trocar chisel and, under nitrous oxide anæsthesia, drive it with a single blow of the hammer into the antrum and at once introduce a specially shaped rubber drainage tube made for me by Messrs. Down Bros. This is fitted with a flanged end at an angle of 45°, which lies easily between the gums and cheek and keeps the tube in position. The patient is instructed to wash out the antrum by forcing lotion, by orbiculo-buccinator action, through the tube and antrum into the nose. I find in the majority of cases that this is satisfactory; if not, I do a radical operation on the lines of Caldwell-Spicer.

Laryngologists, I think, do not excise the uvula very frequently, recognising that most of the symptoms that used to be ascribed to its elongation are really due to other causes. It is still, however, very frequently removed by some practitioners who, whenever a patient complains of any subjective throat symptoms or voice fatigue, snip it off with as little compunction as pathological knowledge. We have improved very little in this matter upon the knowledge and practice of even the most ancient surgeons; for example, in the seventh century of our era Paulus Ægineta wrote that it should only be removed when it causes cough, sleeplessness, and suffocation, and then only as much should be removed as exceeds its natural length, as complete extirpation is injurious, he says, to the voice and chest. It is interesting to note that, even then, the uvula was held by a special forceps adapted to the purpose. Speaking of the ancient surgeons and their ways I have been much struck by the method which they employed for excision of the tonsils. Paulus Ægineta operated in the same manner as was still in vogue when I was a student—namely, pulling out the tonsil with a pair of forceps or tenaculum and cutting it off with a knife, called an ancyclotomus. Celsus directs us to "scrape the membrane with the finger and tear it out," which is really enucleation. Albucasis recommends scissors but also seems to have invented a sort of guillotine and figures an instrument consisting of a lunated piece of iron fixed to a handle. Of the several methods practised at the present time, all of which I at one time or another have tried, I now practically use but two—viz., the guillotine and morcellement. Up to 15 years of age I usually employ a modification of the ordinary spade or Mackenzie guillotine. The blade of the instrument I use is only five inches long, and the handle, instead of being at an obtuse or right angle, is at an acute one. I find that, especially for rapid work—that is, operating under nitrous oxide—one has more control of the instrument, and can, therefore, remove the tonsils more completely and expeditiously. Above 15 years of age I now always use the method of morcellement, considering it more satisfactory than the guillotine. The enlarged tonsils of the adult are so frequently adherent to surrounding parts that this is often the only way I find of completely removing the whole organ. I use Ruault's punch for the larger portions and finish off with Hartmann's conchotomes. The complete removal of both tonsils can be easily done in this way in one sitting and under cocaine anæsthesia. I have used this method in more than 200 cases and the hæmorrhage has always been trivial. Hæmorrhage after tonsillectomy is undoubtedly a rare occurrence. In children it is exceedingly rare. Out of 6000 operations on children under 15 years of age I have met with it but twice—in a boy 13 years of age and in a girl ten years of age. The hæmorrhage was severe in both but not alarming in either. I have also met with severe hæmorrhage in five adult cases. In all seven cases the guillotine was used and the anterior pillar of the fauces was not wounded in any and astringent sprays or gargles were useless. In five the hæmorrhage was controlled by steady and continuous pressure by means of a pad soaked in turpentine or adrenalin held on the stump with the middle finger—the thumb of the same hand pressing below the angle of the jaw. In two cases a spouting vessel was visible, which was stopped in one case by forcipressure and in the other by ligature.

Although adenoids were known to William Hunter and were occasionally described by others, their removal as a regular practice dates from the work of Meyer of Copenhagen in 1868. The operation used to be performed under chloroform or ether, but deaths not infrequently occurring I think all of us have as far as possible discarded them and taken to nitrous oxide. Where enlarged tonsils are present as well as adenoids, as they nearly always are in children, I believe many still use chloroform, but for the last nine or ten years

I have invariably used nitrous oxide and oxygen which I find gives plenty of time for the double operation. When I started operating under gas there was no gag suitable for the purpose. The surgical gags interfered with the administration of the gas and the dental mouth props interfered with the operation. Dr. V. H. W. Wingrave and I brought out, separately, gags which rendered the operation not only possible but easy under the short nitrous oxide anæsthesia. There are a few, but very few, cases for which neither Wingrave's gag nor mine is suitable. When the central incisors project considerably beyond the lateral the gag is apt to slip and in this case I use Doyen's gag, but find it much less comfortable and convenient for general use. I strongly believe in operating with the head hanging over the end of the table. No doubt, to commence with, the operator finds the tongue somewhat in the way for the tonsillectomy, but this difficulty is with very little practice easily surmounted and the advantage of keeping the larynx free from blood alone more than compensates for this. Besides, as regards the adenoids, this position is incomparably superior for using the Gottstein curette and the finger.

The lingual tonsil in my student days was never recognised as a distinct entity. We were certainly aware of the presence of a good deal of adenoid tissue at the root of the tongue, but no one ever thought of attributing any symptoms to it or of treating it surgically. Of course, the common use of the laryngoscope accounts for its perhaps undue prominence during late years. Hypertrophy of this structure is not, in my experience, very common—that is to say, hypertrophy sufficient to produce symptoms. When it occurs it is usually in adults and has given rise to two prominent symptoms—viz., a feeling of fulness at the root of the tongue and occasional sensations of choking. As a rule, galvanopuncture reduces it sufficiently to give relief, but cases sometimes present themselves calling for more radical treatment. I then remove it with a pair of rectangular punch forceps made for me for that purpose about ten years ago by Messrs. Mayer and Meltzer. I have recently met with a case of exceptional enlargement, occurring in a man 54 years of age and consisting of two lobes, each of the size of a Barcelona nut. I have only met with one case of acute abscess of the lingual tonsil. A man, aged 30 years, complained of painful swallowing and the laryngoscope showed a large red swelling of the lingual tonsil, which fluctuated on palpation and which on incision yielded pus with complete relief.

Until the patient and successful work of Krause of Berlin and of Heryng of Warsaw showed us the value of the proper surgical treatment of laryngeal tuberculosis patients were practically left to their fate, local application of morphine, cocaine, and other anæsthetics being the only treatment adopted, and that only in the attempt to relieve the terrible odynphagia. The precepts and example of these two great workers in our specialty have done more for suffering humanity in the alleviation of this terrible symptom than words can describe and although most sufferers from laryngeal phthisis inevitably succumb, yet the relief from pain and the consequent ability to take food prolong life and make it more endurable. A few brilliant cases have been reported where even a cure resulted with restoration of voice. I have found both Krause's double curettes and Heryng's curettes of great service in removing the tuberculous infiltration and so facilitating the application of the lactic acid. Another plan of treatment which I have adopted for a few years, especially where the disease has progressed to ulceration, or where owing to the intractability of the patient the above surgical treatment is impossible, is the insufflation of equal parts of orthoform and resorcin. It is often quite astonishing how quickly this relieves the symptoms and cleans up the ulcerating surfaces.

In no branch of our art has there been more improvement than in the technique and instruments for use in endolaryngeal surgery. Formerly, benign growths, foreign bodies, &c., in the upper respiratory passages were removed by means of external operations, but now, thanks to the laryngoscope and the various and ingenious instruments which have been devised, the practised laryngologist removes such growths as papillomata, fibromata, cysts, &c., of the larynx with comparative ease, and even in cases of suspected malignancy a small scrap removed in this way may give positive microscopic evidence and cause the patient to submit to the radical operation much more early than he otherwise would have done, which makes so much for success or non-success in these cases.

I have found Dr. J. Dundas Grant's laryngeal forceps of especial value in removing growths from the edges of the cords and have often removed at the first attempt with these forceps growths that I have failed to remove with others. Valuable as this method is in the treatment of benign growths, I think all modern laryngologists are agreed that the complete removal of even the smallest malignant growths in this way is impossible and any attempt to do so I consider unjustifiable and unfair to the patient. The successful removal of a malignant neoplasm necessitates the removal of so much surrounding tissue and the condition is so serious that if any operation is to be done it must be an external one, and endolaryngeal interference, I think, only increases the rapidity of growth. In my experience, when the growth has affected the parts outside the larynx, any curative operation is out of the question, but when the disease appears to be intrinsic I advise an exploratory thyrotomy, and, should it then be found that the whole of the disease can be safely removed, we may proceed as far as removing half of the larynx with satisfactory results, but should it be found that the disease is so extensive that complete laryngectomy would be necessary I think it better to proceed no further but to close up the wound, as the results of the complete operation are in my experience always unsatisfactory, and I believe that the patients as a rule will live longer and in greater comfort after a palliative tracheotomy. The importance of early diagnosis and treatment cannot be over-estimated in cases of malignant laryngeal disease. In all cases of even slight hoarseness lasting over a month a careful examination by a skilled laryngologist is imperative. If this were to become a routine practice thyrotomy would be frequently successful and complete laryngectomy rarely necessary.

Concerning tracheotomy there is really very little to be said and all surgeons are much in agreement on the subject. Intubation, except in the case of syphilitic and other forms of laryngeal stenosis, where it is very valuable and may result in a complete cure, cannot be said to be a substitute for it—certainly not, to my mind, in laryngeal diphtheria. Here I regard tracheotomy, if not done too late, as the best way of averting death from asphyxia and, combined with the use of antitoxin, has in my hands been very successful. Where the membrane extends below the larynx one should not be in a hurry to insert a tube but endeavour to clear out any loose membrane, and I have on several occasions, with success, thoroughly curetted the inside of the trachea, as in two cases reported by my late house surgeon, Mr. J. Lawson Dick, in THE LANCET of July 25th, 1896, p. 242.

The treatment of aural diseases has advanced greatly in my time and especially in the case of suppurative disenses of the middle ear. From Wilde's incision and perforation of the antrum we have passed to the complete and excellent operation of Stacke which, if the post-aural incision is closed and drainage is maintained through the enlarged external meatus, gives a result so satisfactory and sightly that patients allow it to be done much more frequently and earlier than formerly and risk of serious diseases of the brain and of surrounding parts is minimised. I consider the Schwartze-Stacke operation to be one of the greatest triumphs of modern surgery. There is another operation which is often efficient in relieving middle-ear suppuration and is especially valuable in attic suppuration; I refer to ossiculectomy, first suggested by Schwartze in 1873. Performed with Delstanche's extracteur de marteau the operation is much easier and is often successful, rendering more serious proceedings unnecessary. This operation has also been much praised in middle-ear sclerosis, but, although I have done it a dozen times at least, I have seen no good permanent results.

Gentlemen, I have finished what I fear is but a cursory and imperfect account of some of the views and conclusions I have come to in my many years of practice of the branch of medicine we especially study. I trust that I have not overwearied you and in concluding let me express the hope that I have in reviewing the subject made myself clear, that I have given offence to no one, and acknowledged my indebtedness justly to each of those who have helped to construct our little chapel in the great temple of knowledge. As time goes on I shall likely enough modify many of my views; our knowledge will extend, new discoveries will be made, and fresh builders will appear on the scene. One portion of our edifice will be pulled down and replaced by other, let us hope always better, work. Another part will from time to time require reconstruction and possibly some great event

may happen necessitating our pulling down the whole fabric and replacing it by another, perhaps by two or three separate edifices. Yet I doubt not that, as necessity arises, there will always be found in our association architects to plan and to devise, and workmen to hew and to build, and from time to time it will be well if someone abler than I will take a survey of the whole work from his view-point and indicate what he considers good and what he thinks inferior work. Such I have tried to do to-day and I trust that my effort has been not altogether unacceptable.

Hunterian Lectures

ON

THE PATHOLOGY AND SURGERY OF CERTAIN DISEASES OF THE PANCREAS.

Delivered before the Royal College of Surgeons of England on March 7th, 9th, and 11th, 1904,

BY A. W. MAYO ROBSON, F.R.C.S. ENG.,
HUNTERIAN PROFESSOR, ROYAL COLLEGE OF SURGEONS OF ENGLAND.

LECTURE III.[1]

Delivered on March 11th.

PANCREATIC CYSTS.

MR. PRESIDENT AND GENTLEMEN,—I have nothing to add to the description, relations, and classification given in Diseases of the Pancreas (Saunders and Co., 1903,) where the subject is fully dealt with and may be studied at leisure.

The surgery of cystic disease of the pancreas is much in advance of pancreatic surgery as a whole and it is a subject in which all authorities are agreed as to the wisdom of simple drainage, which is usually sufficient to bring about relief or cure. In these cases surgery offers a poor opportunity for pathological investigation; for when a pancreatic cyst is found experience has shown that the patient's interest is best considered by a limitation of the incision to a size sufficient to empty and to drain it and not sufficiently large to satisfy pathological requirements. Hence it is highly probable that many reported cases of operations for pancreatic cysts have been for cysts of other origin, and it is an undoubted fact that quite a number of cysts originating from the neighbourhood of the pancreas are only pseudo-cysts, as in two under my own care, where in one a collection of blood and serum filled the lesser peritoneal sac as a result of injury and in another a pseudo-cyst formed rapidly around a necrotic pancreatitis and from the cavity a slough of the pancreas was removed.

The symptoms produced by a pancreatic cyst vary according to the size and seat of the tumour. They are at first dependent on the disease leading to the cystic formation and later to the pressure exercised by the tumour on neighbouring viscera, so that we find digestive disturbance with loss of flesh and epigastric uneasiness or some pain quite early, these being followed in certain cases by very intense pain occurring in paroxysms, by vomiting, constipation, jaundice, and wasting, and later by the presence of a tumour. Fatty stools, azotorrhœa, bulky pale motions, and glycosuria will be present or absent according to the amount of degeneration present in the gland. In all the cases I have observed recently there has been a well-marked pancreatic reaction in the urine, indicating catarrh of the pancreatic ducts or interstitial inflammation, and if this test holds good for cystic disease of the pancreas generally, as I believe it does, it will, I think, form an important diagnostic sign in any case of tumour suspected to be pancreatic. In this connexion it may be well to remark that the most frequent cause of cyst development is chronic interstitial pancreatitis in which compression and constriction of the ducts result from a new formation of connective tissue with consequent stagnation of secretion. The Roentgen rays may also form a useful help in diagnosis in certain cases as they will establish the presence or absence of pancreatic calculi which are quite opaque to the x rays.

It is to be borne in mind that there have been cases of pancreatic cyst presenting very few symptoms except the presence of a tumour which have been under observation for a long time and have needed no active treatment, but these cases are exceptional. In my first lecture I referred to the importance of the peritoneal reflections from the pancreas on to the viscera and how they influenced the ultimate position and relations of pancreatic cysts. For instance, a tumour springing from the anterior surface of the head or body of the pancreas above the transverse mesocolon will project into the omental bursa and if small will bulge the stomach forward, or if large will either reach the surface above the stomach, between it and the liver, or pressing forward below the stomach it will bulge between it and the transverse mesocolon. On the state of the fulness of the stomach will depend the extent of contact of the tumour with the abdominal wall. If a cystic tumour arise from the pancreas to the right of the omental bursal reflection, it may make its way forwards to the right hypochondrium and simulate a gall-bladder or right renal or suprarenal cyst. Should a cyst arise from the posterior part of the head or tail of the gland it may project either into the right or left lumbar region and resemble a cyst of the kidney. If a tumour springs from the head of the pancreas below the reflection of the transverse mesocolon but to the right of the mesenteric vessels, it will reach the surface below the hepatic flexure of the colon on the right side and may simulate a right renal tumour or a tumour of the cæcum or ascending colon, as the mesentery will prevent it passing to the left of the spine; but should it arise from the small portion of the processus uncinatus on the left of the mesenteric vessels, but below the attachment of the transverse mesocolon, it may burrow between the layers of the mesentery and simulate a mesenteric cyst, or it may bulge on the left of the mesentery and reach the surface below the transverse colon on the left of the spine, when it may resemble a left renal or ovarian cyst or a tumour of the descending colon or small intestine.

Tumours springing from the pancreas on the left of the duodeno-jejunal junction, where the lower surface of the gland lies on the transverse mesocolon, have a tendency to press the great omentum forward and to project above the transverse colon, but they may grow downward toward the central region of the abdomen and arch the transverse colon or even project below it so that the colon lies above the tumour. In an interesting case recently recorded by Dr. S. P. Phillips a thin-walled pancreatic cyst springing from the head of the pancreas completely filled the abdomen and presented the physical signs of ascites. Although usually unilocular, pancreatic cysts may be multilocular as in two of the specimens on the table, photographs of which I will show on the screen. I will now show on the screen several photographs to illustrate the anatomical relations of various pancreatic cysts that I have seen and the surface dulness on percussion that may be expected; they have been recorded from the 12 cases on which I have operated.

TREATMENT.

Occasionally excision of the cyst may be performed, as in a case under my own care in a woman, aged 38 years, where the tumour returned after drainage and where the patient made a complete recovery after the second operation; but the greater difficulty in performing excision, the impracticability of doing it always, and the greater mortality attending it as compared with the old operation of incision and drainage, render it quite clear that the lesser operation should always be tried first unless the circumstances be very exceptional. Aspiration and other forms of tapping are antiquated and ineffective methods which are attended with more danger than the operation of incision and drainage and therefore not to be recommended even for diagnostic purposes; this also applies, though in a lesser degree, to operation *à deux temps* which is now rarely performed. As to the situation for drainage, that must entirely depend on circumstances; the cyst will usually be attacked from the front, where it is manifestly nearest the surface. Occasionally it may be drained from the loin as in a case under my own care. Fistula does not as a rule follow the drainage of pancreatic cysts, but in some cases a small fistula may persist and I have known a

[1] Lectures I. and II. were published in THE LANCET of March 19th (p. 775) and 26th (p. 845), 1904, respectively.

fistula to go on for years without hurt to the patient and with very little discomfort. In the cases I have operated on a cyst was enucleated on one occasion, recovery following; drainage was carried out in nine other cases of true cyst and was followed by recovery in eight, whereas of two pseudo-cysts, one due to traumatic hæmorrhagic pancreatitis and the other to necrotic pancreatitis, one recovered. These I shall hope to report more fully before one of the London societies, as the time will not permit me to dwell longer on them now.

An extensive search through literature, in which I have been assisted by Mr. A. Clarke of the Royal Medical and Chirurgical Society's Library, who has verified the references for me, reveals the following facts. 160 cases of operation have been recorded; in 140 recovery took place or is presumed to have taken place; in four cases the ultimate issue was doubtful; in eight out of the 140 of reported recovery after operation the patients died subsequently—one from diabetes four months later, one from tuberculosis three months later, one from hæmorrhage one and a half years later, one from concomitant peritonitis seven weeks later, one from a zymotic fever a few weeks later, and three from causes not stated a few weeks later. Death is recorded as the result of operation in 20 cases. In five of these the cause and time after operation are not given. One patient died in collapse, one died before operation could be completed (the next day), one died from "ileus," one died 18 days after operation (cause not stated), two died from shock, one died from gangrene of the pancreas, and eight died from peritonitis. Of these eight dying from peritonitis, one died at interval not stated, one after 96 hours, one after six days, one after an exploratory incision, two after two days, one on the eighth day, and one on the second day. In 138, incision and drainage were performed with 16 deaths, equal to a mortality of 11·6 per cent. In 15 excision was performed, with three deaths, equal to a mortality of 20 per cent. In seven partial excision was done with one death, equal to a mortality of 14·3 per cent. Although larger numbers have been reported by others, the above figures are as nearly correct as appears to be possible, for on verifying the records sometimes the same case had been reported twice, in others wrong dates had been given, and in a few the details were so meagre that the nature of the operation was not given. The evidence is clearly in favour of drainage but the mortality should certainly be reduced by one-half. As to the frequency of cysts of the pancreas Dr. W. Hale White has recorded that in nearly 6000 post-mortem examinations at Guy's Hospital, 1883 to 1894, pancreatic cysts were only found in four cases and one of these was a hydatid cyst.

INJURIES OF THE PANCREAS.

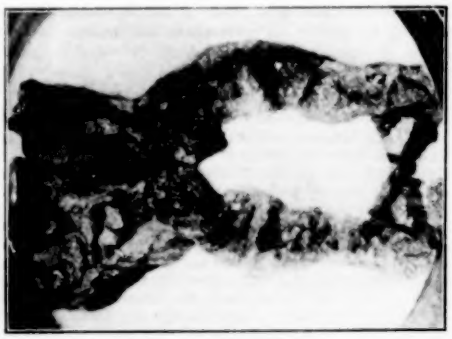
Injuries of the pancreas have been so recently and so ably dealt with by von Mikulicz Radecki[2] that I need not spend much time on the subject. It is quite clear that injury to the pancreas is not necessarily fatal, as shown by the development of cysts the result of accident and their successful treatment. The indications for operation depend on the severity of the symptoms and on the presence of either hæmorrhage or inflammation, which may demand operation. If, therefore, after an injury in the superior abdominal region there be increasing anæmia, the signs of free blood in the peritoneum, or peritonitis, the surgeon will be called on to operate without delay. Severe injuries of the pancreas not operated on terminate fatally in nearly every case. Out of 45 cases of pancreatic injury collected by von Mikulicz 24 were perforating, 12 were gunshot, and nine were stab wounds. Of the gunshot injuries five were operated on, three recovering; the seven not operated on all died. Of the stab wounds all were operated on and eight out of nine recovered. Of the 24 subcutaneous injuries 13 were not operated on and all died. Of the 11 operated on seven recovered. No hard-and-fast rule can be formulated as to the method of treatment; the injured part must be exposed and either ligature of vessels or suture of surfaces adopted, but gauze tampons and drainage form important features in any of these operations, and where the peritoneum has been generally soiled with blood and pancreatic effusion lavage with hot saline fluid affords the double advantage of relieving shock and cleansing the abdomen. In view of the favourable results obtained by operation and the lethal effects of non-operative treatment, the only lesson that can be drawn is that we should make an exploratory laparotomy whenever there is a question of severe pancreatic injury. The photograph now thrown on the screen illustrates an extensive hæmorrhage in and around the pancreas the result of injury; it is from a specimen at St. Bartholomew's Hospital Museum, kindly lent for this lecture.

[2] Annals of Surgery.

PANCREATIC CALCULUS.

Although two cases of pancreatic calculi were observed by Panarol and Gaiea in 1667 and by others at later dates they are so uncommon that Oser quite recently said there were only 70 recorded cases. I have heard of seven since not included in that series but doubtless there are many unrecorded. The subject of pancreatic concretions can never assume the importance that attaches to cholelithiasis, but as they are associated with serious and usually progressive disease of the gland, and as they can be removed by operation, their recognition and treatment is a matter that demands some consideration. I believe that calculi never form in a healthy pancreas and it seems highly probable that, like gall-stones, pancreatic concretions are the result of catarrh of the ducts with stagnation of secretion, which generally if not always results from infection. Instead of calculi being formed the ducts may actually be lined with calcareous material that may accumulate so much as to close completely, or almost completely, the lumen. An example of this (for which I am indebted to the University College Hospital Museum) I will show on the screen. It will be noticed that the duct of Wirsung is widely dilated and that it also contains calculi. A convenient term for this disease may be "pancreolithic catarrh." As a rule the calculi are numerous and in only three known cases has a solitary calculus been found. The photographs I now throw on the screen showing numerous calculi are from the Royal College of Surgeons of England and the Leeds Museum, to the pathological curators of which I am deeply indebted (Fig. 13). They all show multiple

FIG. 13.



Pancreas containing calculi (Leeds Museum).

calculi and in every case it will be seen how seriously the glands have deteriorated. In every case they are the seat of cysts, dilated ducts, chronic interstitial pancreatitis, or abscess along with the concretions.

The composition of pancreatic calculi is important from the diagnostic point of view, for they contain lime either in the form of carbonate or phosphate or, as in one case reported by Mr Shattock, of oxalate, which latter was found in a cyst. In examining the urine of cases suffering from chronic pancreatitis oxalate of lime crystals have been found by Dr. Cammidge in over 40 per cent. In jaundiced cases in which the bile acids take up the lime salts they have been found only in 6 per cent. of cases. It would be interesting to know if this fact has any bearing on the composition of pancreatic concretions, for it is a well-known fact that the normal pancreatic secretion contains no calcium carbonate. The subject is worthy of further investigation. The consequence of this chemical composition is that pancreatic calculi are opaque to the x rays and in this way we have a means of diagnosing their presence and of differentiating them from gall-stones, which are not seen in a skiagram. I am able

to show you on the screen an x-ray photograph of concretions taken from a case where at the same time I removed gall-stones and pancreatic calculi, and for comparison I show an ordinary photograph of the two classes of concretions together. The difference in their appearance in the skiagram is readily seen (Fig. 14). The next photograph,

FIG. 14.

X-ray photograph of biliary and pancreatic calculi.

taken by Dr. J. Mackenzie Davidson, shows the calculi *in situ* and as the vessels have been injected they also show distinctly. So far as I know this method of diagnosis is here suggested for the first time. I feel confident that in future it will be employed regularly and I believe that by means of the urinary pancreatic reaction we shall also be able to confirm the diagnosis by demonstrating the associated chronic pancreatitis.

I will now show on the screen a number of calculi showing their usual elongated shape. Shupmann has recorded a calculus measuring two and a half inches by half an inch and weighing 200 grains, and Matani has reported one weighing two ounces. In colour they are pale and they may be white, but if they pass into the common bile-duct they receive a covering of cholesterine and may be stained by the bile so as to look like gall-stones. The symptoms depend on the associated condition, whether that be cyst, abscess, chronic inflammation, or other pathological state; doubtless in some cases symptoms are vague or even wanting and in some cases pancreatic calculi have only been discovered post mortem. Glycosuria was recorded by Lancereux in 12 out of 40 cases. Pains at the epigastrium radiating towards the inferior angle of the left scapula, often agonising in character and associated with vomiting, may be present and the attacks may be brought on by exertion or may be irregular, coming on at any hour, day or night. Dyspepsia and flatulence are usually associated. Liporrhœa and azotorrhœa, as well as bulky pale motions, are present when there is well-marked interstitial pancreatitis, and in some cases where the interstitial changes have advanced to atrophy or fatty degeneration of the whole gland glycosuria is found. The pancreatic reaction in the urine was well marked in a case on which I operated and I think it will be generally found. If a calculus descends into the ampulla of Vater jaundice will ensue and the case will probably be diagnosed as one of gall-stones in the common duct, but the urinary pancreatic reaction and the use of the x rays should enable a differential diagnosis to be made.

MEDICAL TREATMENT.

The treatment by sialagogues, such as injections of pilocarpine, it seems to me, must be useless and mere waste of time. Relief to pain may be given by sedatives and other treatment must be adopted as occasion arises, but as soon as pancreatic stones can be diagnosed they should be removed, as destruction of the pancreas is otherwise certain and it is quite clear that medical treatment can do no real good in these cases.

SURGICAL TREATMENT.

Surgical treatment has until quite recently been merely palliative, but fortunately surgery can now offer a reasonable hope of cure. Some years ago I pointed out that the pancreatic duct could be readily explored by an incision in the second part of the duodenum and by then laying open the biliary papilla, when the opening of Wirsung's duct can be seen. In this way I have passed a probe two inches along the duct of Wirsung to explore it and have removed a pancreatic calculus from the duodenal end of the duct. A very exhaustive search through English and foreign literature, in which Mr. Clarke has helped me, has only resulted in the discovery of five operations for pancreatic calculi. Mr. A. Pearce Gould's case, operated on March 3rd, 1896, died on the twelfth day from exhaustion. In Dr. Dalziel's case a stone of the size of a very large pea was removed from the pancreatic duct through an incision in the duodenum, the opening in the duct being stitched to the wound in the posterior wall of the duodenum. As the bile-duct was clear there was no jaundice. A good recovery followed. In Mr. B. G. A. Moynihan's case reported in THE LANCET of August 9th, 1902, p. 355, a pancreatic stone was removed from the ampulla of Vater through an incision in the duodenum and the patient recovered. In Dr. L. W. Allen's case reported in the "Annals of Surgery," 1903, p. 741, two calculi were removed from a cyst between the lesser curvature of the stomach and the liver. The patient died on the fifth day after operation. In a case under my own care, which has not been yet fully reported, I operated on Feb. 13th, 1903, on a woman, aged 57 years, and removed four calculi, one from the duct of Santorini or one of its branches by direct incision into the pancreas close to the common duct, afterwards closing the opening by deep and by peritoneal sutures; the second and third stones I reached through an incision in the duodenum by laying open the papilla, when by means of fine forceps I removed a calculus out of Wirsung's duct, along which I afterwards passed a probe for two inches, and a fourth concretion I removed by direct pancreatotomy from the middle of the duct of Wirsung, the stone being reached by dividing the gastro-hepatic omentum, drawing the stomach downwards, incising the pancreas freely, and opening the duct directly on to the stone which was of the size of a small bean and which I show on the screen. The duct was then closed with catgut, the wound in the body of the pancreas being sutured so as to leave no dead space and the peritoneal wounds being closed without direct drainage. The right kidney pouch was then drained as some infected bile had escaped. Recovery was ultimately complete. In this case pain and vomiting were marked features and the pancreatic reaction was of the utmost importance from the point of view of diagnosis. This is, I believe, the first case in which either the duct of Wirsung or the duct of Santorini has been deliberately opened and, after the removal of a calculus, closed by a suture.

THE OPERATION OF PANCREO-LITHOTOMY.

For the purpose of removing calculi from the pancreas an incision one or one and a half inches to the right of the middle line will be found the most convenient, as the fibres of the right rectus can be split and the incision lengthened upwards and downwards without unnecessarily weakening the abdominal wall. A sand bag under the lumbar spine will bring the gland several inches nearer the surface. If the opening of the duct of Wirsung has to be explored, the second part of the duodenum may be incised and the papilla common to the bile and pancreatic ducts laid open when the edges of the opened diverticulum of Vater can be seized with small catch forceps and drawn to the surface; a probe or fine forceps can then be readily passed into Wirsung's duct and any concretion removed. If the calculi are more deeply placed in the ducts the pancreas may be exposed either through the gastro-hepatic omentum by drawing the stomach downwards or by lifting the stomach it may be reached through a slit in the omentum. The calculi may be then cut down on and extracted by a scoop or forceps. Any bleeding must be arrested by ligatures. The duct can be sutured and the incision in the gland must be brought together by buried sutures, the peritoneal covering being coapted by a continuous suture. If leakage is feared a gauze drain may be applied but the position may be difficult for this and if it has to be done the gauze must be surrounded by a rubber drainage-tube and brought through it to the surface. In

my case of pancreo-lithotomy I felt the closure of the gland was so secure as not to require gauze packing and the result justified my not using it. When the duodenum is opened it must be closed in the usual way by a muco-muscular and a serous suture, the latter being of fine celluloid thread. The incised papilla need not be sutured. If a calculus be felt in the head of the gland but not in the duct of Wirsung it may be reached by incising the peritoneum over the duodenum and separating it gently from the head of the pancreas, or if more deeply placed near the back of the gland the reflection of peritoneum from the duodenum to the abdominal wall may be incised and the duodenum may then be displaced inwards, when the back of the pancreas will be exposed and if thought advisable it may be incised and treated as in the incision from the front.

NEOPLASMS.

It is quite impossible in a short course of lectures even to touch on all the diseases of the pancreas. I must therefore under this heading confine myself simply to cancer and sarcoma, leaving for another occasion the study of adenoma, lymphoma, and the granulomata, tubercle, and syphilis.

Carcinoma.—Carcinoma is the most common of the neoplasms found in the pancreas. Out of 53,000 necropsies gathered from various sources where post-mortem examinations were presumably carefully made there were 226 cases of primary malignant disease of the pancreas (Roswell Park), but as these include Remo Segré's cases from the Ospedale Maggiore, Milan, in which the primary and secondary growths are not separated, the proportion of primary growths is probably not so large. Secondary growths are much more common, for instance, in Eppinger's statistics, of 1314 necropsies there were 308 cancers in various organs, of which 19 were in the pancreas, but of these only two were primary. It seems advisable to remark here that all past post-mortem records with regard to cancer of the pancreas must be fallacious as until recently cases of chronic interstitial pancreatitis causing occlusion of the common bile-duct were not differentiated. The tumour in cancer may take the form of scirrhus or encephaloid cancer, columnar epithelioma or colloid cancer, and these are given in their order of frequency. I will throw on the screen examples of each of these forms, as well as examples of cancer of the liver secondary to cancer of the pancreas, showing how the secondary disease conforms to the type of the primary.

Cancer usually occurs after 40 years of age, though I have operated for cancer of the head of the pancreas at 32 years of age and rarely it has been known to occur in childhood. I have seen and personally examined considerably over 100 cases of cancer of the pancreas, in many of which the diagnosis has been subsequently confirmed by operation or by necropsy and my experience has been that loss of weight and strength with indigestion and general malaise are the first symptoms, pain being usually absent or unimportant; that when the head of the pancreas is involved jaundice rapidly ensues, the liver swells, and the gall-bladder dilates. The patient then seems almost to dissolve away, the loss of flesh being so rapid. The motions become pale, contain fat and muscle fibre if meat be taken, and the urine gives a well-marked and special pancreatic reaction. Sugar is only found when the whole gland is involved either in the malignant disease or by secondary interstitial pancreatitis of the interacinar type.

It is quite common to find in these cases evidences of pancreatitis superadded to the growth and this causes a change in the urinary reaction which may lead to an error in diagnosis unless it is borne in mind that such a sequence is possible. There is as a rule no difficulty in diagnosing cancer of the head of the pancreas from interstitial pancreatitis, as the urinary reactions are quite distinct if performed with care, and the general symptoms, especially the duration of the disease, will usually enable the diagnosis to be made. In exceptional cases, especially when the tumour is large and growing rapidly, pain may be severe and excruciating and if the stomach is invaded vomiting assumes a prominent place. The hæmorrhagic tendency, in connexion with cancer of the head of the pancreas and jaundice, is well known, but even in cancer of the body or tail of the organ a hæmorrhagic condition may ensue. Probably the excretion of lime salts from the blood may account for the hæmorrhagic condition and for the relief that can be given by the use of calcium chloride. Bleeding from the stomach or the mouth and from the intestines, or hæmorrhages under the skin are apt to occur spontaneously and to become serious or even fatal, and in case of operation, unless the blood be previously charged with lime salts, bleeding is likely to occur in the shape of persistent oozing both at the time of operating and subsequently.

When the tumour attains any size it may be palpated from the front, but in ordinary scirrhus of the head of the pancreas no tumour can be felt, except enlargement of the gall-bladder which is generally present. Bronzing of the skin may come on if the adrenals are involved. Ascites or dropsy of the lower limbs may come on from pressure on the portal vein or inferior vena cava, or from secondary involvement of the liver, but apart from pressure slight œdema of the feet is often an early sign. Death occurs from exhaustion as a rule within a few months and is never very long delayed—in fact, cancer affecting the head of the pancreas is more rapidly fatal than when occurring in any other organ.

The typical clinical picture of malignant disease of the pancreas may thus be drawn: a patient suffers for a time from indefinite symptoms of digestive disturbance, then jaundice appears, coming gradually but persistently increasing; the gall-bladder is usually distended and the liver is normal or slightly enlarged. A tumour may be found in the neighbourhood of the pancreas. Cachexia rapidly develops and in some cases pain disturbs the patient's rest. There is soon a feeling of intense prostration and weakness. The fæces are massive and contain fat or fat-acids and an undue proportion of undigested muscle fibre. The urine contains albumin frequently and sugar and fat rarely. The whole clinical course is run, as a rule, within 12 months and after the appearance of jaundice within from six to eight months.

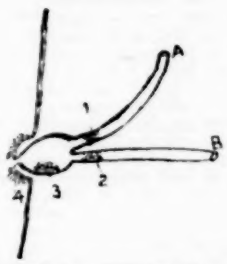
DIFFERENTIAL DIAGNOSIS.

In malignant disease of the pancreas the symptoms are not constant. The cases may be divided into three chief types: 1. Where the tumour extends to the right and compresses or occludes the common bile and the pancreatic ducts. 2. Where it takes an upward and forward direction and besides compressing the bile-duct leads to pyloric stenosis. In this case to the typical symptoms are added those of dilated stomach. 3. Where the extension is backwards, causing compression of the vena cava and of the portal veins, thus leading to an early onset of ascites and later to œdema of the lower extremities. When the body and tail of the pancreas are involved the symptoms are atypical and the development of a tumour with steady loss of strength and increasing anæmia are such as might be due to any malignant tumour outside the pancreas. In the differential diagnosis of cancer of the head of the pancreas we must consider common duct cholelithiasis, interstitial pancreatitis, cancer of the common bile-duct, cancer of the liver, cancer of the pylorus, and chronic catarrh of the bile-ducts. Whenever in a patient at or past middle age jaundice comes on painlessly and becomes absolute, at the same time that the gall-bladder gradually enlarges so as to form a perceptible tumour and the patient rapidly loses flesh and strength, a diagnosis of cancer of the head of the pancreas will probably be correct. The diagnosis will be made more certain if there is an absence of tenderness below the right costal margin associated with a tumour opposite to, or above, the umbilicus, having communicated pulsation and not moving with respiration. On distending the stomach with carbon dioxide it will be found that the tumour, at the best rather indefinite, becomes hidden behind the resonant stomach and that the distended gall-bladder becomes pushed to the right. If cholelithiasis has preceded the onset of cancer the gall-bladder will not be enlarged but the rapid deterioration of health and the presence of anasarca and ascites will, as a rule, leave no doubt of the nature of the disease. In common duct cholelithiasis there is practically always a preliminary history of gall-stone attacks, though it may have been years previously. The jaundice will have come on after pain and is probably never absolute, for some bile nearly always escapes past gall-stones in the duodenum. The bile soon becomes infected and the ague-like seizures follow and an irregular temperature, at times almost resembling pyæmia. In place of a distended gall-bladder a rigid right rectus will be felt which often makes it difficult to examine the parts beneath. A tender spot will usually be found an inch above, and to the right of, the umbilicus and the pain will be found to pass backwards to the midscapular region or to a spot beneath the right shoulder-blade. Whereas in cancer of the head of the pancreas the disease is only a question of months, in cholelithiasis it may be one of years. Pancreatic catarrh or

chronic pancreatitis frequently accompanies gall-stones in the common duct and clears up after their removal, but it may persist after the cause has passed away. Whenever a tumour of the head of the pancreas is felt during a gall-stone operation, especially if before middle life, hope may always be felt that the disease may be simple and may clear up by the drainage of the ducts. A long history is in favour of the simple disease, as are the presence of adhesions, the history of painful attacks, and the presence of tenderness above the umbilicus. In chronic pancreatitis it is not uncommon to find enlarged glands in the free border of the lesser omentum, but they are discrete when the disease is simple and generally confluent in cancerous affections. The jaundice may be absolute, but as a rule it is not complete. Infective cholangitis and infection of the pancreatic ducts are commonly present, as shown by the temperature and by ague-like seizures. Although the loss of flesh is marked it is less evident than in cancer of the head of the pancreas, and until the disease has existed for a longer time than cancer gives its victim there is no sign of anasarca or ascites or of enlarged abdominal veins. The gall-bladder is seldom distended, though this is not an absolute rule, as I have seen it much enlarged on several occasions.

Between gall-stones in the common duct and chronic pancreatitis (which frequently coexist) it is often difficult to determine, but this is of no moment from a practical point of view, as surgical treatment is, as a rule, demanded in both conditions. Anæmia is much more marked in cancer of the head of the pancreas than in chronic interstitial pancreatitis. Cancer of the common duct is rare and is usually associated with gall-stones; if the disease involves the papilla the symptoms are indistinguishable from those of cancer of the head of the pancreas; but if it be situated above the opening of the pancreatic duct it will not interfere with the functions of the pancreas and therefore the loss of flesh will not be so rapid. In one case on which I operated suppurative cholangitis was present, but this is not a constant event. Cancer of the liver is distinguished by the jaundice being absent or much less intense and by the enlargement of the liver with irregular nodules on its surface and edges. The accompanying diagram shows the positions that growths may occupy in the neighbourhood of the papilla (Fig. 15). In

FIG. 15.



1. Growth commencing in common bile-duct A. 2. Growth commencing in Wirsung's duct B. 3. Growth commencing in diverticulum. 4. Growth commencing on papilla.

simple catarrhal jaundice the symptoms are almost negative except for the jaundice and loss of appetite, and the way in which it yields to treatment shows the slighter nature of the ailment. In cancer of the pylorus the predominance of gastric symptoms and the dilatation of the stomach with absence of free hydrochloric acid and presence of blood in the vomit usually enable a diagnosis to be made, but it should not be forgotten that cancer of the pylorus and of the head of the pancreas frequently coexist. In all these cases the urinary test affords most valuable help in diagnosis.

TREATMENT.

Medical treatment must be purely symptomatic; morphine if needed for the relief of pain; calcium chloride for the prevention of hæmorrhage; pankreon tablets or liquor pancreaticus for the digestion of food; and other remedies for symptoms as they arise. Surgical treatment is not very hopeful and has usually been undertaken under the idea that the cause of the jaundice might be a removeable one or that drainage of the bile-ducts might afford relief to the jaundice, but if the disease has involved the head of the pancreas it is hopeless however treated. Treatment may be radical or palliative. Ruggi of Bologna removed through the loin a cancer of the pancreas weighing 23 ounces. It was probably growing from the tail of the gland. Complete recovery followed and the patient was well for three months, after which secondary disease developed and the patient died at the end of six months. Professor Ruggi himself furnished me with these details. Cades' was the second successful case, in 1895, a tumour of the tail of the pancreas of the size of a child's head being removed. Terrier in 1892 removed a tumour weighing five pounds but lost his patient. Of 16 operations for removal of solid tumours of the pancreas, eight recovered, which, considering the difficulty of the operation and the depth of the organ to be operated on, is better than one would have expected. Successful pancreatectomies it will be seen are exceptional cases and are only feasible where the growth is not involving the head of the gland; they, however, clearly demonstrate that a tumour of the body or of the tail of the pancreas may be removed with equal chances of recovery, and should the disease be primary and no secondary growths or glandular involvement have occurred, great prolongation of life is quite possible. Of the palliative operations, cholecystotomy and cholecystenterostomy for the relief of jaundice in cancer of the head of the pancreas, I can speak about very decidedly, as I have operated on 28 cases, all the patients being extremely ill at the time of operation. Many of these cases occurred when there was a difficulty in making a diagnosis between cancer of the head of the pancreas and gall-stones in the common duct or between cancer and interstitial pancreatitis, difficulties which have been overcome recently. Of the 15 cases in which the gall-bladder was drained eight recovered from the operation, the longest survival being eight months, but the average survival being about four months; of the six cholecystenterostomies two recovered and the duration of life was only a few weeks. Even a simple exploratory operation in these cases is attended with danger, for out of six cases four only recovered from operation. Dr. Murphy of Chicago was kind enough to furnish me with a report of his statistics of cholecystenterostomy up to 1897. Of 67 non-malignant cases there had only been three deaths, but of his 12 malignant cases 10 died, giving a mortality of 83 3 per cent. Thus it will be seen that any palliative operation for the relief of cancer of the head of the pancreas associated with jaundice is useless, as, even if recovery occurs, life is not prolonged to any great extent.

SARCOMA.

Primary sarcoma of the pancreas is undoubtedly rare, though secondary disease, especially of the melanotic type, seems to be less uncommon. I have found examples of sarcoma in several of the museums, photographs of which I have obtained and will now show on the screen. The first is of melanotic sarcoma from the Hunterian Museum, the specimen being on the table (Fig. 16). It was taken from

FIG. 16.

Melanotic sarcoma of the pancreas.

a girl, aged 20 years, and was secondary to a melanotic growth in the eye which was removed three years before her death. The next specimen shows melanotic sarcoma with fat necrosis. The next is from St. George's Hospital, No. 201 E, and shows a secondary sarcoma, the primary growth being in the thymus gland. The next specimen is a very large spindle-celled sarcoma from University College Hospital Museum, No. 3200 (Fig. 17). The growth has

completely involved the gland and has left no trace of gland tissue. The next specimen (Fig. 18) I throw on the screen is on the table, No. 2836 A. It was removed from the tail of the pancreas but the child succumbed shortly after

FIG. 17

Spindle-celled sarcoma of the pancreas.

the operation. Operation for sarcoma of the pancreas is uncommon, though the few cases operated on prove that if the tumour be in the tail of the pancreas the case is one amenable to surgical treatment. I explored the abdomen in one case of the kind but found the disease too extensive

FIG. 18.

Sarcoma removed from the tail of the pancreas.

for removal. Kronlein in 1894 removed a tumour of the size of the fist but the patient died seven days later. A tumour which was successfully removed by Briggs proved to be sarcomatous degeneration of an echinococcus cyst.

Mr. President, I must apologise for the imperfect manner in which I have been able to deal with the several subjects in my last lecture but want of time has compelled me to cut out much of what I should like to have said. I hope, however, that my lectures will be the means of exciting more general interest in the surgery of the pancreas, a subject which I feel is much more worthy of attention than hitherto has been accorded to it. It only remains for me to thank you for the patient hearing and the kindly interest that have been shown in what I have had to say and at the same time I would thank the Council of the Royal College of Surgeons of England for the honour they have done me in electing me a third time to hold this important chair.

ON THE PRECIPITIN OF COBRA VENOM.

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SECOND COMMUNICATION.

IN a previous communication[1] on the above subject it was shown that the serum of a rabbit which had been subjected to gradually increasing doses of pure unheated cobra venom possesses the property of causing a coagulum or precipitum when mixed in suitable proportions with solutions of suitable strength of this venom; that, in short, the rabbit reacts to injections of the proteids of cobra venom exactly in the same way—that is, by the formation of specific precipitins—in which it reacts to injections of various other proteid substances, such as the proteids of serum, egg albumen, Witte's peptone, &c. It was further demonstrated that when this immune serum and a solution of cobra venom of definite strength were mixed in suitable proportions both the precipitin and the precipitable proteids were entirely used up. Taking advantage of this fact we were able to give a numerical expression to the precipitin value of the serum in terms of the amount of cobra venom which a given quantity of serum would exactly neutralise. It was on this account suggested that by this method we might possibly have at hand an easy and ready means of standardising an antivenomous serum. In conclusion, it was shown in this communication that while the serum of a rabbit immunised with cobra venom gave with the proteids of daboia venom a copious precipitum, indistinguishable, in fact, from the precipitum given with cobra venom itself, no coagulum was obtained when this serum was mixed with the venoms of three other species of snakes—namely, (1) echis carinata, (2) bungarus fasciatus, and (3) hoplocephalus curtus.

In the present communication it is proposed further to extend these observations in several directions which were indicated in the previous paper. It is, however, as well to mention at the outset that several of the problems which were then mentioned as awaiting solution have still to be left undecided. In the first place, the observations summarised above have been extended by testing a cobra venom serum—that is to say, the serum of a rabbit highly immunised with pure unheated cobra poison—with the venoms of five other species of snakes—namely, (1) naja bungarus; (king cobra); (2) bungarus cœruleus (common krait); (3) enhydrina valakadien (a common sea snake); (4) trimeresurus gramineus (green pit viper); and (5) crotalus adamanteus (Californian rattlesnake).[2] In order to make these observations as conclusive as possible two methods of technique were employed in each instance. The first method consisted in mixing different proportions of serum with one part of venom solution of definite strength—namely, 0·05 per cent. In the second method three parts of serum were mixed with one part of venom solution of different strengths. In all cases these mixtures were effected by means of Wright's tubes of large calibre. The preparations were then kept at from 35° to 37° C. for about 20 hours, when the results were recorded. A reference to the protocols (Tables I. and II.) will show that while no coagulum was formed with three of the poisons mentioned above—namely, the venoms of naja bungarus, of bungarus cœruleus, and of crotalus adamanteus—and only a trace of precipitum with the venom of enhydrina valakadien, a marked precipitum was obtained with the poison of trimeresurus gramineus. This precipitum, however, was not nearly so copious as those got with coora venom itself and with daboia venom. Taking the above results along with those which were contained in my previous communication we can divide the venoms which have been tested with a serum prepared by injecting rabbits with pure unheated cobra poison into three groups as follows:—

GROUP A. *Venoms which give a copious precipitum.*—(1) Venom of naja tripudians (cobra); and (2) venom of vipera Russellii (daboia).

[1] THE LANCET, August 16th, 1902, p. 431.

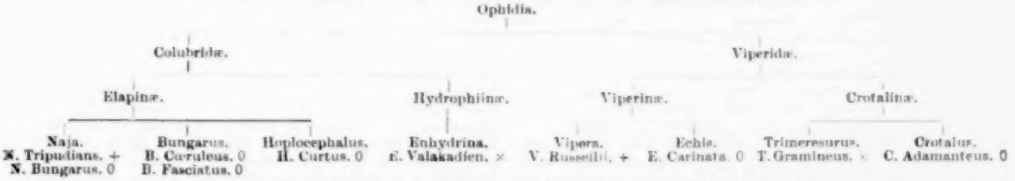
[2] The king cobra venom was obtained from two snakes the property of the Natural History Society, Bombay; the sea-snake venom from Mr. Peal, Calcutta; and the crotalus venom from Professor S. Flexner, Philadelphia. I am much indebted for these gifts. The other poisons were collected under my own supervision.

GROUP B. *Venoms which give a marked or trace of precipitum.*—(3) Venom of trimeresurus gramineus (green pit viper); and (4) venom of enhydrina valakadien (common sea snake).

GROUP C. *Venoms which give no precipitum.*—(5) Venom of naja bungarus (king cobra), (6) venom of bungarus cœruleus (common krait), (7) venom of bungarus fasciatus (banded krait), (8) venom of hoplocephalus curtus (tiger snake), (9) venom of echis carinata (phoorsa), and (10) venom of crotalus adamanteus (Californian rattlesnake).

With a view of seeing if the venoms which give a precipitin reaction with a cobra venom immune serum are derived from species which are more closely related in the animal kingdom to the cobra than are the species the poisons of which do not give this reaction, the accompanying diagram, which shows at a glance the position of these several species among the ophidia, has been constructed.

DIAGRAM SHOWING THE PRECIPITIN REACTION IN DIFFERENT SPECIES.



\+ Give a copious precipitum. × Give a marked or trace of precipitum. 0 Give no precipitum.

A study of this diagram will at once make it apparent that this venom precipitin test affords no indication of the closeness of species relationship. Thus, for example, it will be noted on the one hand that the venom of naja bungarus, a species belonging to the same genus as the cobra, gives no precipitum with a cobra venom immune serum, and, on the other hand, that the venom of vipera Russellii, a species belonging even to a different family from the cobra, gives a copious precipitum with cobra venom immune serum. These observations therefore are not in accord with the similar observations which have been made by Nuttall and others working with immune sera prepared by injections of the sera of different species of animals and which went to show that a serum prepared by injections of the serum of one species of animal gave a certain amount of precipitum with the sera of animals closely related to the animal the serum of which was used for the injections and gave no precipitum with the sera of animals more distantly related. The same law does not evidently hold good for the venoms of the poisonous snakes. Further, these results show that great differences must exist between the proteids of the poisons of the several species of snakes, differences which must be kept carefully before the mind when dealing with the physiological actions of the venoms of the several species.

In the second place, I have now to pass on to the consideration of some observations which were made with the serum of the cobra itself and with the serum of a rabbit which had been treated by repeated injections of cobra serum. The cobra serum was obtained by opening the thorax of living snakes, cutting the aorta across, and catching the blood from the cut end. After allowing the blood to clot a clear serum was got by centrifugalisation. The first series of experiments was made with a view of ascertaining if cobra serum contained any precipitin for cobra venom. Two methods of experimentation were employed. In one method four parts of serum were mixed with one part of cobra venom solution of a strength varying from 1 per cent. to 0·0078 per cent. In the other method varying proportions of the serum were brought in contact with one part of cobra venom solution of fixed strength—namely, 0·05 per cent. The proportions of serum to venom solution varied from 10 to 1 to 1 to 2. As no trace of coagulum was obtained in any of these preparations the experiments are not given in detail in the protocols.

Such a result was only to be expected. It has been shown by several observers that the cobra is immune to its own poison and that this immunity is not due to the presence of any antitoxic substances in its blood. It is therefore evident that, although constant absorption of the poison must be taking place, neither antitoxin nor precipitin is prepared. Stating the conclusion to be drawn from these facts in the language of Ehrlich's side-chain theory, we can say that the cobra's cells must be deficient in the specific receptors which are present in the cells of animals susceptible to the poison and which allow of the poison being bound to the cells. It would be interesting in this connexion to ascertain whether the central nervous tissues of the cobra were able to neutralise the poison in vitro in the same manner as has been shown in the case of those tissues of susceptible animals and also whether the cobra's red cells were susceptible to the poison in the same way as the red cells of other animals—that is to say, were hæmolysed by the venom. Unfortunately, however, I have no living cobras at present at my disposal.

The second series of observations now under consideration was made with cobra venom immune serum and cobra serum. In these experiments also two methods of technique were employed. In one method the cobra venom immune serum was mixed in varying proportions with one part of cobra serum. These proportions varied from 10 to 1 to 1 to 1. In the other method four parts of cobra venom serum were mixed with one part of different dilutions of cobra serum, the dilutions varying from two-fold to 1024-fold. In both instances the cobra venom immune serum was the serum of a rabbit highly immunised with cobra venom. Not a trace of coagulum was observed in any of these preparations. We can therefore conclude that the serum of a rabbit highly immunised with cobra venom contains no precipitin for cobra serum.

The third series of experiments was made with a view of ascertaining if the serum of a rabbit which had been treated with injections of cobra serum contained any precipitin for this serum as well as for daboia serum. A rabbit was treated with three subcutaneous injections of fresh cobra serum. These injections, amounting to 11 cubic centimetres in all, were made at intervals of about ten days. The serum of the rabbit was collected eight days after the last injection. It was then tested against both cobra serum and daboia serum, the latter of which was obtained in the same manner as has been described in the case of the cobra serum. A reference to the protocols (Tables III. and IV.) will show that a very copious and well marked precipitum was obtained with cobra serum, while a much less marked but still distinct reaction was obtained with daboia serum. The difference between these two reactions was very apparent and is well shown by the fact that in many of the preparations when a very copious coagulum was observed with cobra serum only opacity without any distinct sedimentation was seen in the corresponding tubes made with daboia serum.

It was now of interest to ascertain if this rabbit's serum, prepared with cobra serum, gave any precipitin reaction with cobra venom. An experiment made with this end in view is detailed in Table V. of the protocols. It will be seen from this table that a well-marked precipitin reaction took place between these two substances. The reaction, however, was not so well marked as that between cobra venom immune serum and cobra venom. It is difficult in the present state of our knowledge as regards proteid precipitin and proteid assimilation to reconcile the two facts now demonstrated—namely, that a serum prepared by injections of cobra venom contains no precipitin for cobra serum but that a serum prepared by injections of cobra serum gives a well-marked precipitum with cobra venom. I am afraid I can at present offer no suitable explanation of the phenomena.

In my previous communication on the subject under discussion I was able to show that, working with the serum of a rabbit immunised with cobra venom, it was possible to give a numerical expression to the precipitin value of this serum by estimating with what proportions of serum and

venom solution of known strength both the precipitin and precipitable substances were used up. Further, it was suggested that by such an estimation of the precipitin value of a serum a method of standardising an antivenomous serum might be elaborated. In the third place, I have now to put on record some observations which show definitely that the hope which was then expressed cannot be fulfilled. In the course of these experiments some interesting points were settled as regards the relationship of precipitin to antitoxin. These points will also now receive attention. The first experiments were made with the serum of an ass which had received over a period of six months repeated injections of pure unheated cobra venom. The antitoxic value of this serum was estimated by experiments on rats after the method already described.[3] A reference to the protocols (Table VI.) will show that one cubic centimetre of this serum was able to neutralise 0·07 milligramme of cobra venom. On experimenting now to ascertain the precipitin value of the serum it was found that it contained no, or only the merest trace of, precipitin (*vide* protocols, Table VII.). This result at once suggested that the formation of antitoxin is independent of the formation of precipitin. As, however, the antitoxic value of this serum was by no means high, it was necessary to make further experiments with a serum of much greater antitoxic power. Further observations were therefore made with the serum of a horse (Horse A) which had been treated over a period of nearly two years with repeated subcutaneous injections of pure unheated cobra venom. The antitoxic value of this serum was determined in a manner similar to that used in the case of the serum of the ass, small rabbits, however, being employed instead of rats. It will be seen from the protocols (Table VIII.) that one cubic centimetre of this serum was able to neutralise at least 1·2 milligrammes of cobra venom, an antitoxic value nearly 20 times greater than that of the serum of the ass. An attempt was next made to estimate the precipitin value of the serum. If the results obtained in these experiments (protocols, Tables IX. and X.) be compared with the results of the estimation of the precipitin content of the serum of a rabbit highly immunised with cobra venom (protocols, Tables XIV.–XVII.) it will be at once seen that this horse's serum contained evidently such a small amount of precipitin that there was no possibility of making an accurate estimation of it after the manner I have already described.[4] First, it appears from these two observations that neither the ass nor the horse, in comparison with the rabbit, is a suitable animal for the preparation of a precipitin for cobra venom. This conclusion is substantiated by experiments which were made with the serum of another horse (Horse B) which had been subjected over a period of 15 months to repeated injections of pure unheated cobra venom. The serum of this horse was also found to contain very little precipitin. As the experiments gave practically the same results as those obtained with the serum of Horse A they are not detailed in the protocols. It is only necessary to add that the reaction was not quite so well marked as in the case of the serum of Horse A, but it was sufficient to show that a certain, though small, amount of precipitin was present. Secondly, it appears from these two observations that the elaboration of precipitin is quite independent of the formation of antitoxin which results from injections of pure cobra venom. To this point we shall return in a moment. It is now, however, evident from these two facts—namely, that the horse, the animal most suitable for the preparation of an antitoxic serum, reacts only slightly to the injection of cobra venom by the formation of specific precipitin and that the formation of precipitin seems to be quite independent of the formation of antitoxin—that the suggestion I previously put forward that this precipitin test might furnish us with a method of standardisation of antivenomous sera cannot be realised.

A further proof of the fact that the formation of precipitin is quite independent of the elaboration of antitoxin is afforded from the examination of the serum of a horse (Horse C) which had been treated for a period of 22 months by repeated injections of pure cobra venom heated for half an hour at 72° C. The antitoxic value of this serum, as estimated on small rabbits (*vide* protocols, Table XI.), was found to be considerable, one cubic centimetre of serum being able to neutralise about one milligramme of unheated cobra venom. On testing for the presence of precipitin in this serum it was found to contain practically none of this substance (protocols, Tables XII. and XIII.). Further, I tested the sera of two horses which were in the process of immunisation also with pure cobra venom heated for half an hour at 72° C. One of these horses had been under treatment for a period of six months and the other for a period of three months. Neither of these sera contained even a trace of precipitin. Now we have seen above that the serum of a horse immunised with unheated cobra poison contains precipitin, although the quantity, in comparison with the amount present in the serum of an immunised rabbit, is small. It would appear, therefore, from these last observations that when the solution of venom is heated at 72° C. before injection the elaboration of precipitin does not take place in the case of the horse. In conclusion, I have now to bring forward the result of an observation which also bears on the question of the elaboration of precipitin being independent of that of antitoxic substances inasmuch as it consists of some estimations made at intervals of the amount of precipitin present in the serum of a rabbit which was treated over a period of 19 months with gradually increasing doses of pure unheated cobra venom.

Two methods were used to form an estimate of the amount of precipitin in this serum. Linossier and Lemoine,[5] as a result of a long series of experiments, pointed out that in order to give a numerical expression to the precipitin value of a serum it was only necessary to ascertain at what maximum dilution the precipitable proteids begin to be precipitated under the action of a known precipitin, the proportion of serum to the various dilutions remaining the same in all the preparations. On this principle one of the methods employed in my experiments was founded. Further, I also used the method described in my previous communication—namely, the method of estimating with what proportion of serum and venom solution of known strength a neutral solution was obtained; that is to say, a solution containing neither precipitin nor precipitable substances. The first precipitin estimation of this rabbit's serum was made after the animal had been under treatment for a period of five months, during which period it had received a total amount of 0·0151 gramme of venom. The last injection made before this observation was one of 0·0018 gramme—that is, about six lethal doses. It will be seen from the protocols (Table XIV.) that at this period of immunisation when three parts of serum were mixed with one part of venom solutions of different strengths a coagulum began to appear with a solution of a strength of 0·00625 per cent. Further, it will be seen (Table XV., *a* and *b*) that the neutralisation point was reached when six parts of serum were mixed with one part of venom solution of 0·05 per cent. strength. Various observations were made at intervals after this primary estimation, but at no time was any increase of this precipitin value of the serum found to be present. At the end of 19 months when the rabbit had received as a last dose 0·008 gramme, equivalent to about 26 lethal doses, and a total amount of 0·151 gramme of venom, the precipitin value of the serum remained practically the same as it was 14 months previously (protocols, Tables XVI. and XVII.). If anything it had slightly decreased. Thus, when three parts of serum were mixed with venom solutions of different strengths only a mere trace of coagulum was observed in the preparation containing a solution of 0·00625 per cent. strength and the neutralisation point was reached when eight parts of serum were mixed with one part of venom solution of 0·05 per cent. strength. From these observations we can conclude that the precipitin value of the serum of a rabbit undergoing immunisation with pure unheated cobra venom quickly reaches a maximum and remains at or about this level during the process. Although the antitoxic value of this particular serum was not at any time estimated, we can take it from *a priori* reasons and from the facts that the animal stood well the gradually increasing doses of venom and was at the time of the last experiment in a condition of high immunisation, that the serum was at the end of the process of high antitoxic value. These observations therefore lend support to the conclusion arrived at already—namely, that the elaboration of the precipitin of cobra venom is quite independent of the formation of true antitoxin.

PROTOCOLS.

In all the precipitin experiments detailed hereafter the mixtures were effected by means of Wright's sedimentation

[3] Scientific Memoirs by Officers of the Medical and Sanitary Departments of the Government of India. New Series. 1902. No. 1.

[4] THE LANCET, August 16th, 1902, p. 431.

[5] Comptes Rendus de la Société de Biologie, tome liv., 1902, pp. 85, 276, 320, and 369.

tubes of large calibre. The tubes after being sealed were kept at from 35° to 37° C. for 20 hours, when the results were recorded. In all the tables the following signs are used: + signifies a copious precipitum; × signifies a marked precipitum; * signifies a slight or trace of precipitum; † signifies opacity without any precipitation; and 0 signifies no precipitum or opacity.

TABLES I. AND II.—*Experiments with Cobra Venom Serum and other Varieties of Snake Venom.*

The serum which was used was that of a rabbit which had been highly immunised by subcutaneous injections of pure unheated cobra poison. The snake venoms were obtained from (1) naja bungarus (king cobra) = N.B.V.; (2) bungarus cœruleus (common krait) = B.C.V.; (3) enhydrina valakadien (common sea snake) = E.V.V.; (4) trimeresurus gramineus (green pit viper) = T.G.V.; and (5) crotalus adamanteus (Californian rattlesnake) = C.A.V. Two series of experiments were made. In the first series varying proportions of serum were mixed with one part of a 0·05 per cent. solution of each poison. The following were the results obtained:—

TABLE I.

Proportion of serum to venom solution (0·05 per cent.)	N.B.V.	B.C.V.	E.V.V.	T.G.V.	C.A.V.
12–1	0	0	0	*	0
10–1	0	0	0	*	0
8–1	0	0	0	×	0
6–1	0	0	*	×	0
4–1	0	0	*	*	0
2–1	0	0	*	*	0
1–1	0	0	0	*	0

In the second series of experiments three parts of serum were mixed with one part of a solution of different strengths of each variety of poison as indicated below. The dilutions of venom were made with normal saline solution. The following were the results obtained:—

TABLE II.

Serum = 3 parts; venom solution = 1 part.

Strength of venom solution per cent.	N.B.V.	B.C.V.	E.V.V.	T.G.V.	C.A.V.
0·2	0	0	—	×	0
0·1	0	0	*	×	0
0·05	0	0	*	*	0
0·025	0	0	*	*	0
0·0125	0	0	*	*	0
0·00625	0	0	0	0	0
0·003125	0	0	0	0	0

TABLES III. AND IV.—*Experiments with the Serum of a Rabbit treated with Cobra Serum and Cobra and Daboia Sera.*

A rabbit was treated with three subcutaneous injections of two cubic centimetres, four cubic centimetres, and five cubic centimetres of cobra serum at intervals of ten days. Eight days after the last injection its serum was collected. Two methods of technique were employed. In the first series of observations varying amounts of the treated rabbit's serum were mixed with one part of both cobra serum and daboia serum. The following was the result:—

TABLE III.

Proportion of rabbit's serum to snake serum.	Cobra serum.	Daboia serum.
8–1	+	†
6–1	+	†
4–1	+	†
2–1	+	†
1–1	+	†

In the second series of observations three parts of the treated rabbit's serum were mixed with one part of increasing dilutions of both cobra serum and daboia serum. The dilutions were made with normal salt solution. The following results were obtained:—

TABLE IV.

Treated rabbit's serum = 3 parts. Diluted snake serum = 1 part.

Dilutions of cobra or daboia serum.	Cobra serum.	Daboia serum.
2 fold	+	†
4 ,,	+	†
8 ,,	+	×
16 ,,	+	×
32 ,,	+	*
64 ,,	×	*
128 ,,	×	*
256 ,,	×	*
512 ,,	*	0
1024 ,,	*	0

TABLE V.—*Experiment with the Serum of a Rabbit treated with Cobra Serum and Cobra Venom.*

The same rabbit's serum as was used in the previous observations was employed. Varying amounts of serum were mixed with one part of a cobra venom solution of fixed strength (0·05 per cent.). The following results were obtained:—

Parts of treated rabbit's serum.	Parts of cobra venom solution (0·05 per cent.).	Result.
8	1	*
6	1	*
4	1	+
2	1	×
1	1	×
1	2	×

TABLE VI.—*Experiments to Estimate the Antitoxin Value of the Serum of an Ass treated with repeated Injections of pure unheated Cobra Venom.*

The ass had received over a period of six months repeated injections, gradually increasing in amount, of pure unheated cobra venom. The animals used for testing the serum were rats of about 115 grammes in weight. The minimum lethal dose of cobra venom for a rat of this size is about 0·05 milligramme. The test dose of venom used was 0·25 milligramme—that is to say, five lethal doses. This test dose and varying amounts of serum were mixed in vitro and allowed to stand for half an hour at laboratory temperature (25° C.). The mixtures were injected subcutaneously. The following was the result:—

Animal.	Cobra venom in milligrammes.	Serum.	Result.
Rat 1	0·25	1 0 c.c.	Died in four hours.
,, 2	,,	2 0 ,,	,, 24 ,,
,, 3	,,	2 5 ,,	,, 44 ,,
,, 4	,,	3 0 ,,	No symptoms.
,, 5	,,	3·5 ,,	
,, 6	,,	4 0 ,,	
,, 7	,,	4·5 ,,	
,, 8 (control) ...	,,	*Nil.*	Died in three hours.

From the above series of experiments we can conclude that three cubic centimetres of serum could neutralise at least 0·25 − 0·04 = 0·21 milligramme of venom—that is, that one cubic centimetre could neutralise 0·07 milligramme.

TABLE VII.—*Experiment to Show the Precipitin Reaction of the Serum of an Ass treated with repeated Injections of pure unheated Cobra Venom.*

The serum used was the same as that employed in the previous series of observations. The method now employed to test the precipitin reaction was that method in which different proportions of serum are mixed with one part of 0·05 per cent. solution of cobra venom. The following was the result obtained :—

Parts of serum.	Parts of cobra venom (0·05 per cent.)	Result.
10	1	0
8	1	0
6	1	0
4	1	0
2	1	0
1	1	0
½	2	+

TABLE VIII.—*Experiments to Estimate the Antitoxin Value of the Serum of Horse A.*

This horse had been treated over a period of nearly two years with repeated subcutaneous injections, gradually increasing in amount, of pure unheated cobra venom. The test dose of cobra venom, left unheated, now used was two milligrammes for rabbits of about 650 grammes in weight—namely, about ten lethal doses. The minimum lethal dose, by subcutaneous injection, for rabbits of this sample of venom was about 0·35 milligramme per kilogramme. The test dose and different amounts of serum were mixed in vitro and the mixtures were allowed to stand for half an hour at laboratory temperature. They were then injected subcutaneously. The following were the results :—

Animal.	Weight (grammes).	Cobra venom in milligrammes	Serum.	Result.
Rabbit 1	610	2	1·0 c.c.	Died in 2½ hours.
,, 2	680	,,	1·3 ,,	,, 12 ,,
,, 3	615	,,	1·4 ,,	,, 13½ ,,
,, 4	720	,,	1·5 ,,	No symptoms.
,, 5	685	,,	1·6 ,,	,,

From these experiments it will be seen that 1·5 cubic centimetres of serum neutralised 2 − 0·2 (maximum non-lethal dose for rabbit of 720 grammes) = 1·8 milligrammes. Therefore one cubic centimetre could neutralise 1·2 milligrammes.

TABLES IX. AND X.—*Experiments to Show the Precipitin Reaction between the Serum of Horse A and Cobra Venom.*

The same serum as was used for the experiments detailed above was employed to test the precipitin reaction. Two methods of technique were employed. In the first series of experiments varying proportions of serum were mixed with one part of a 0·05 per cent. solution of cobra venom. The following results were obtained :—

TABLE IX.

Parts of serum.	Parts of cobra venom solution (0·05 per cent.).	Result.
10	1	0
8	1	0
6	1	0
4	1	+
2	1	+
1	1	+
1	2	+

In the second series of experiments three parts of serum were mixed with one part of cobra venom solution of different strengths. The following was the result :—

TABLE X.

Parts of serum = 3 ; parts of C. V. solution = 1.

Strength of cobra venom solution.	Result.
0·2 per cent.	+
0·1 ,,	+
0·05 ,,	+
0·025 ,,	0
0·0125 ,,	0
0·00625 ,,	0
0·003125 ,,	0

TABLE XI.—*Experiments to Estimate the Antitoxin Value of the Serum of Horse C.*

This horse had been treated over a period of 22 months with gradually increasing doses of pure cobra venom heated for half an hour at 72° C. The technique used for this estimation was the same as was used in the experiments detailed in Table VIII. The following were the results :—

Animal.	Weight (grammes).	Cobra venom in milligrammes.	Serum.	Result.
Rabbit 1	750	2	1·0 c.c.	Died in 3 hours.
,, 2	580	,,	1·3 ,,	,, 3 ,,
,, 3	500	,,	1·6 ,,	,, 18 ,,
,, 4	780	,,	1·8 ,,	No symptoms.
,, 5	700	,,	2·0 ,,	,,

From these experiments it will be seen that 1·8 cubic centimetres of serum neutralised 2 − 0·2 = 1·8 milligrammes of venom. Therefore one cubic centimetre could neutralise one milligramme.

TABLES XII. AND XIII.—*Experiments to Show the Precipitin Reaction between the Serum of Horse C and Cobra Venom.*

The same serum as was used in the experiments detailed above was now employed to test the precipitin reaction. Two methods of technique were employed. In the first series of experiments varying proportions of serum were mixed with one part of a 0·05 per cent. solution of cobra venom. The following results were obtained :—

TABLE XII.

Parts of serum.	Parts of cobra venom solution (0·05 per cent.)	Result.
10	1	0
8	1	0
6	1	
4	1	
2	1	0
1	1	Slight opacity.

In the second series of experiments three parts of serum were mixed with one part of cobra venom solution of different strengths. The following was the result :—

TABLE XIII.

Parts of serum = 3 ; parts of C.V. solution = 1.

Strength of C. V. solution.	Result.
0·2 per cent.	
0·1 ,,	Slight opacity
0·05 ,,	0
0·02 ,,	0
0·0125 ,,	
0·00625 ,,	0

From these observations it can be concluded that this serum contained practically no precipitin.

TABLES XIV. TO XVII.—*Experiments to Estimate the Amount of Precipitin in the Serum of a Rabbit at Different Stages in the Process of Immunisation with Cobra Venom.*

The rabbit was treated over a period of 19 months with subcutaneous injections of gradually increasing doses of pure unheated cobra venom. The first estimation of the precipitin content of the serum was made after the rabbit had been under treatment for five months, having received during this time 0·0151 gramme of venom. Two methods of appraising the precipitin value of the serum were employed. 1 In the first instance three parts of serum were mixed with one part of venom solution of different strengths. The following were the results :—

TABLE XIV.

Parts of serum = 3 ; parts of C.V. solution = 1.

Strength of venom solution.	Result.
0·1 per cent.	+
0·05 ,,	+
0·025 ,,	+
0·0125 ,,	+
0·00625 ,,	*
0·003125 ,,	0

2. In the second instance varying proportions of serum were mixed with one part of venom solution of fixed strength (0·05 per cent.). The following result was obtained :—

TABLE XV. (*a*).

Parts of serum.	Parts of venom solution (0·05 per cent.).	Result.
12	1	+
8	1	+
6	1	+
4	1	+
2	1	×
1	1	

The clear supernatant fluid in each of these tubes was then obtained by simply filing off the end of the tube with the contained precipitum. It was divided into two portions. To one portion was added an equal quantity of cobra venom solution (0 05 per cent) and to the other portion was added an equal amount of the same serum as was used in the first series of experiments. The results were as follows :—

TABLE XV. (*b*).

Proportion of serum to venom solution in original preparation.	C.V. solution (0·05 per cent.).	Serum.
12-1	*	0
8-1	*	0
6-1	0	0
4-1	0	*
2-1	0	×
1-1	0	+

It is evident, then, that the neutralisation point was reached when six parts of serum were mixed with one part of the venom solution (0 05 per cent.). The last estimation of the precipitin value of this rabbit's serum was made after it had been under treatment for 19 months, having received during this period 0 151 gramme of venom. The same method was used to estimate the precipitin value of the serum as in the previous observation. The results were as follows.

TABLE XVI.

Parts of serum = 3 ; parts of C.V. solution = 1.

Strength of venom solution.	Result.
0·1 per cent.	×
0·05 ,,	+
0·025 ,,	*
0·0125 ,,	*
0·00625 ,,	*
0·003125 ,,	0

TABLE XVII. (*a*).

Parts of serum.	Parts of cobra venom solution (0·05 per cent.)	Result.
12	1	+
10	1	+
8	1	+
6	1	+
4	1	×
2	1	×
1	1	*

The supernatant fluid in each tube was treated in the same manner as in the experiments detailed above (Table XV., *a*). The following was the result :—

TABLE XVII. (*b*).

Proportion of serum to venom solution in original preparation.	C.V. solution (0·05 per cent.)	Serum.
12-1	*	0
10-1	*	0
8-1	0	0
6-1	0	*
4-1	0	*
2-1	0	*
1-1	0	×

It is evident, then, that the neutralisation point was, in this case, reached when eight parts of serum were mixed with one part of venom solution (0·05 per cent.)

Kasauli, India.

ON A NEW METHOD OF TESTING THE BLOOD AND THE URINE,

WITH SPECIAL REFERENCE TO THE DETERMINATION OF THE EXCRETORY EFFICIENCY OF THE KIDNEY.

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THE examination of the urine for albumin is a very indirect, ineffective, and often fallacious method of obtaining information with regard to the excretory efficiency of the kidney. While it is capable of revealing leakage of the albuminous substances from the blood into the urine it tells us nothing with regard to the excretion of the salts and products of metabolism generally into the urine. This information is furnished by comparative cryoscopic examinations of the urine and of the blood from which that urine has been elaborated. These examinations, involving as they do not only resort to complicated and delicate apparatus but

also the employment of a comparatively large quantity of blood, are impracticable in connexion with ordinary clinical work. The difficulties which are associated with cryoscopic work may be avoided by the method described below. The information which it furnishes seems likely to be of value alike to the clinician, the operating surgeon, and the medical officer who has to deal with life insurance.

Principle of the method.—A standard quantity of normal red corpuscles suspended in a measured volume of salt solution of a standard strength furnishes a test fluid. The urine, or as the case may be the blood fluid (serum) from which that urine is derived, is mixed in progressive dilutions in a capillary tube with measured volumes of the standard suspension of red blood corpuscles. The point is determined at which the urine or serum has been so far diluted as to allow of complete hæmolysis of the standard suspension of red corpuscles. From these data taken in association with the data obtained on diluting the suspension of corpuscles with progressive dilutions of a decinormal sodium chloride solution, the concentration of the serum and urine is calculated. The quotient obtained by dividing the latter by the former is denoted "*the excretory quotient.*"

Procedure employed in making the suspension of red corpuscles.—A stout piece of glass tubing about 2 centimetres in thickness is taken. It is drawn out in the blow-pipe flame into a narrower stem about 5 centimetres in length and 0·5 centimetre thick. The extremity of this stem is again drawn out into a still narrower tube. A graduation mark is now placed with a glass writing pencil upon the stem at a distance of, say, 1·5 centimetres from its extremity. A watery fluid or mercury is now drawn in through the capillary of the extremity tube until the stem is filled in up to the fiduciary mark. Two further graduation marks are now to be added, the points of application of these marks being found by displacing the column of fluid along the capillary stem until its distal limit corresponds in each case to the preceding fiduciary mark. Blood obtained from a prick in the finger is now filled in through the capillary orifice. When the upper limit of the column of blood stands level with the second division mark the orifice of the tube is introduced into a vessel containing decinormal sodium chloride solution and the fluid is aspirated into the tube until a 50- to 100-fold dilution of the blood has been effected. The extremity of the tube having been sealed the centrifuge is now brought into use and the centrifugalisation is continued until the corpuscles have all been driven down below the upper of the three graduation marks. The supernatant fluid is now pipetted off and, if necessary, decinormal solution is added until the upper limit of the fluid stands level with the upper graduation mark. The fluid and the red corpuscles are now thoroughly mixed up together. Inasmuch as two volumes of normal blood furnish one volume of corpuscles and inasmuch as the plasma has been diluted to practically an unlimited extent the suspension which has been obtained may without appreciable error be said to correspond to one volume of corpuscles completed to three volumes by decinormal salt solution.

Standardisation of the corpuscular suspension.—In the case where we desire to compare among themselves a number of separate observations on the blood or urine undertaken upon different days or with the bloods of different persons it is essential to determine in each case how far the standard suspension requires to be diluted before complete hæmolysis is obtained. For this purpose we make, employing a capillary pipette and the technique of dilution described in previous papers,[1] a series of progressive dilutions of our decinormal sodium chloride solution. Usually it will suffice if we make a four-fold, five-fold, and six-fold, and intermediate dilutions. We now take up into our capillary pipette one volume of each of these dilutions, mixing in each case with one volume of the suspension of corpuscles. Holding at arm's length the capillary pipette which contains this series of mixtures and disposing the tube so that light may strike upon it obliquely we take cognisance of the hæmolytic effect. Opacity and a bright appearance, referable to the reflection of light to the eye, indicate incomplete transparency, and a dark colouration, due to the absence of reflection, indicate complete hæmolysis. Usually complete hæmolysis is obtained on mixing one volume of the $\frac{N}{50}$ (0·117 per cent.) or $\frac{N}{60}$ (circ. 0·1 per cent.) sodium chloride solution with one volume of the corpuscular suspension.

Precautions to be observed in collecting the serum and urine which are to be compared.—In each case the samples of blood and urine are obtained from patients who have not drunk anything for a period of hours. Where accurate comparisons are required the bladder is emptied before commencing operations. A sample of blood is thereupon withdrawn and as soon as possible afterwards a sample of newly secreted urine is passed.

Procedure for making the progressive dilutions of serum or, as the case may be, of the urine and for mixing these in each case with equal volumes of the standardised suspension of red corpuscles.—The technique to be employed is exactly the same as that employed in the standardisation of the corpuscular suspension. It is convenient in each case to begin with a 4-fold dilution and then to follow on with an 8-fold, 16-fold, and if necessary 32-fold dilution. When a dilution which gives complete hæmolysis has been arrived at we can, by going back upon the original 4 fold dilution, make for ourselves the particular intermediate dilution which may be required. This will be a 6-fold, 12-fold, or 24-fold dilution according as the complete hæmolytic effect has been obtained in an 8-fold, 16-fold, or, as the case may be, 32-fold dilution.

Usually in the case of the normal serum complete hæmolysis will be achieved with the 8 fold but not with the 6-fold dilution. In the case of the normal urine it will be achieved with either the 16-, 24-, or 32 fold dilution.

We obtain a convenient—but only approximately accurate—expression for the concentration of the serum or urine we are testing by setting it down as x-times greater than that of the salt solution which was in the standardisation of the corpuscular suspension found to effect complete hæmolysis—x representing in this expression the dilution of the serum or urine which had been arrived at when the complete hæmolytic effect was obtained. Adopting this system of notification the concentration of the serum and urine was found to be as follows in a series of normal men.

TABLE I.—*Setting forth the Concentration (expressed in terms of NaCl) of the Serum and Urine and the Excretory Quotient of Normal Adult Men.*

No.	Date.	Concentration of—		Excretory quotient.
		Serum.	Urine.	
		Per cent.	Per cent.	
1	5.2.04	0·78	1·56	2
	6.2.04	0·78	1·56	2
2	6.2.04	0·78	1·56	2
	11.2.04	0·78	1·56	2
	13.2.04	0·78	1·56	2
	24.2.04	0·78	1·56	2
3*	5.2.04	0·78	3·0	4
	8.2.04	0·78	3·0	4
	9.2.04	0·78	3·0	4
	11.2.04	0·78	3·9	5
	12.2.04	0·78	1·56	2
	13.2.04	0·78	3·0	4
	16.2.04	0·78	4·7	6
	27.2.04	0·78	1·56	2
4	18.2.04	0·78	1·56	2
5	26.2.04	0·78	3·0	4
6	26.2.04	0·78	3·0	4
7†	26.2.04	0·78	1·2	1·5
8	26.2.04	0·78	1·56	2

* The subject of these observations perspires a great deal and excretes proportionately less urine.

† The subject of this observation had drunk freely some hours before. In association with this it may be mentioned that the subject of observation Number 1 was successful in reducing the concentration of his urine to less than 0·1 per cent. NaCl by drinking 1500 cubic centimetres (circ. three pints) of water upon an empty stomach.

It will be seen that the concentration of the serum is a very constant function in health and that the excretory quotient is, if we except the first observation made in the

[1] THE LANCET, July 5th, 1902, p. 11, and July 25th, 1903, p. 214.

case of the man denoted by the serial number 7, always two or more than two.

TABLE II.—*Setting forth the Concentration (Expressed in Terms of NaCl) of the Serum and Urine and the Excretory Quotient in the Case of Patients Suffering from Renal Disease.*

Serial number of case.	Clinical data.	Concentration of— Serum.	Concentration of— Urine.	Excretory quotient.
		Per cent.	Per cent.	
1	Patient, a woman, aged 54 years, has suffered for two months from œdema of the feet and legs. Urine contains half its volume of albumin.	2·0	1·56	0·76
2	Patient, a woman, aged 52 years, contracted scarlet fever in childhood. Urine erstwhile passed in large quantities has recently become scanty. Vomiting and headache seven days ago. Has considerable thickening of arteries and a high arterial tension.	0·97	1·2	1·2
3	Patient, a woman, aged 35 years, dates back her illness to an attack of scarlet fever in childhood. An exploratory incision has revealed extensive destructive changes in the right kidney. Patient suffers from headache and incapacity for exertion. Urine is free from albumin. Coli bacilli are present in pure culture in urine.	0·78	0·78	1·0
4	Patient, a child, aged about 11 years, is the subject of enlarged liver and spleen, fibrosis of the base of the right lung, and swelling of the legs. Urine contains half its volume of albumin.	0·97	0·97	1·0
5	Patient, a woman, aged about 50 years, who is now lying in a semi-comatose condition, has suffered from giddiness, twitching, and vomiting. Hypertrophy of the heart and arterio-sclerosis are well marked. Double optic neuritis. Urine contains one fifth volume of albumin.	0·97	0·48	0·5
6	Patient, a woman, aged about 30 years, the subject of extensive swelling of the legs and face suffers from headache and vomiting. Had scarlet fever when two years of age. Has lately been confined and has suffered from dropsy with each of three former pregnancies. Vascular changes slight. Large quantity of albumin in the urine.	1·56	0·78	0·5
7	Patient, aged 26 years, dated back her illness to five years ago, when she suffered from headache and vomiting. Since that date she has had several subacute attacks, with anasarca, headache, and vomiting. Her symptoms are now passing off.	1·56	3·0	2·0
8	Patient, aged 17 years, has recently suffered from œdema of the face and legs, with occasional vomiting, headache, and traces of blood in the urine. These symptoms have now all disappeared.	1·56	1·56	1·0
9	Patient, aged 22 years, is suffering from epistaxis, pain in back, frequency of micturition, headache, twitching, and vomiting, with some drowsiness and anasarca.	1·0	2·0	2·0
10	Patient, an elderly man, is suffering from œdema, anasarca, and ascites, with albumin in the urine.	0·78	0·29	0·37
11	Patient, a middle aged man, suffering from headache, incapacity for exertion and albuminuria.	1·2	0·78	0·66
12	Patient is a boy with ascites and albuminuria.	0·97	0·97	1·0
13	Frequent micturition, with tubercle bacilli in the urine.	0·92 1·1	1·15 1·1	1·2 1·0
14	Pain and tenderness and sensible swelling of both kidneys, frequent micturition, very large number of tubercle bacilli in the urine.	1·4 1·1	1·1 1·1	0·79 1·0
15	*Patient has had right kidney which was the subject of cystic degeneration extirpated. Her urine is free from albumin.*	*1 8th*	*1·32nd*	*4·0*

Remarks.—Case 1.—Diagnosis: parenchymatous nephritis. Case 2.—Diagnosis: interstitial nephritis. Case 3.—Extirpation of kidney is under consideration. Case 4.—Diagnosis: amyloid disease. Case 5.—Diagnosis: interstitial nephritis. Case 6.—Diagnosis: parenchymatous nephritis. Case 7.—Diagnosis: parenchymatous nephritis. Case 8.—Diagnosis: subacute nephritis. Case 9.—Diagnosis: chronic parenchymatous nephritis. Case 10.—Diagnosis: chronic parenchymatous nephritis complicated by cirrhosis of the liver. Case 11.—Diagnosis: chronic parenchymatous nephritis. Case 12.—Diagnosis: acute nephritis. Case 13.—Tubercle of kidney. The second of the estimations was made five days after the first. Case 14.—Tubercle of kidney. The second estimation was made four days after the first.

TABLE III.—*Setting forth the Concentration (expressed in Terms of NaCl) of the Serum and Urine and the Excretory Quotient in the case of the Subjects of Pernicious Anæmia and Chlorosis.*

Serial number of case.	Clinical data.	Concentration of— Serum.	Concentration of— Urine.	Excretory quotient.
		Per cent.	Per cent.	
1	Patient is suffering from advanced *pernicious anæmia*. Examination of the blood films shows marked poikilocytosis and the presence of nucleated red blood corpuscles.	0·78	—	—
2	Patient, aged 35 years, is suffering from *pernicious anæmia*. Red blood corpuscles, 1,700,000; marked poikilocytosis. No nucleated red blood corpuscles.	2·4	—	—
3	Patient, aged 19 years, is suffering from well-marked *chlorosis* associated with amenorrhœa, constipation, shortness of breath, and cramp.	1·0 1·56 1·56	—	—
4	Patient, aged 21 years, is suffering from *chlorosis* associated with œdema of the legs, constipation, and dyspepsia.	3·0 1·2 1·56	3·0	2
5	Patient, aged 18 years, is suffering from *chlorosis* irregularity of the bowels, and chorea hystericus.	1·0	—	—
6	Patient is suffering from *gastric ulcer with profound anæmia*.	1·0 0·78	—	—
7	Patient, aged 25 years, is suffering from *gastric ulcer and anæmia* dating back nine years.	2·4 1·2 1·56	3·0	2
8	Patient, aged 25 years, has suffered from anæmia complicated with thrombosis, first of the left and then of the right leg.	2·44	—	—

It is brought out in the cases tabulated above that the serum is modified in a characteristic way. The improvement which appears in the successive observations made in Cases 4, 6, and 7 may, perhaps, be referred to the treatment. It will be observed that the excretory quotient in the two cases where it was tested conforms to the normal.

Concluding remarks and question as to the precise significance of the method of testing here recommended.—We have seen above that the investigation of the *hæmolytic index*[2] of the serum or, as the case may be, the comparative estimation of the hæmolytic indices of the serum and urine is likely to prove of utility in connexion with clinical work. It may clear up a diagnosis, it may tell us whether a patient is in a condition to undergo a surgical operation, it may give warning of the approaching advent of uræmic symptoms, it may assist the physician in selecting the proper dietary for a patient who is suffering from Bright's disease, and it may serve to distinguish between so-called functional and organic albuminuria. While it is, perhaps, not essential to the achievement of these practical ends that the exact significance of the test should be cleared up it is obviously a desideratum that we should know so far as possible what it is that we are measuring. It seems probable that what is measured by the hæmolytic index is generally the salt content of the fluid. This is not the place to go into the consideration of the grounds upon which this inference is made. It will suffice to bring out the following. The presence of urea in a fluid is, so far as this test is concerned, a matter of indifference, hæmolysis being obtained at precisely the same point when diluting with a 5 per cent. solution of urea as when diluting with distilled water. The specific electrical conductivity of the fluids which we have, by the kindness of Dr. A. D. Waller, been able to test in the physiological laboratory of the University of London was found to be

[2] By the term "hæmolytic index" is signified the fraction which expresses the dilution of the serum, or as the case may be of the urine, which produces a complete hæmolytic effect when added in each case to an equal volume of the standardised suspension of red corpuscles.

roughly[1] proportional to the salt content of the fluids as estimated by the method here in question. This is exhibited in the table below (Table IV.).

TABLE IV.

Fluid tested.	Relative concentrations of the fluids in salts as determined by the hæmolytic method.	Relative concentrations of the fluid in salts as determined by the specific electric conductivity.
Ascitic fluid from patient with acute nephritis	100	100
Urine from same case	75	89
Urine from case of parenchymatous nephritis	50	57
Urine from case of interstitial nephritis	50	40

In conclusion attention may be drawn to the fact that specific hæmolysins, such as are found in the blood of animals which have been immunised by injections of red blood corpuscles, do not come into consideration in connexion with the hæmolytic method as here applied. This is shown by the fact that the "hæmolytic index" of serum, or as the case may be of urine, which has been exposed to a temperature of 65° C. for ten minutes is exactly the same as that of the unheated serum or urine. Attention may be drawn also to the at present quite unexplained fact that the hæmolytic index of serum, or as the case may be of urine, which contains a considerable quantity of albumin, is represented by a higher fraction after it has been raised to the boiling point. It is to be noted that this alteration of the hæmolytic index is not associated with any comparable alteration in the specific electric conductivity of the fluid.

TABLE V.—*Setting forth the Dilutions with which a Complete Hæmolytic Effect was obtained in the case of Serum and Urine tested before and after Exposure to a Temperature of 100° C.*

Nature of fluid whose hæmolytic index was examined.	Hæmolytic index of the unheated fluid.	Hæmolytic index of fluid after exposure to a temperature of 100° C.
Serum from normal man	1-8th	1-16th
Serum from another normal man	1-8th	1-16th
Serum from patient suffering from amyloid disease of the kidney, &c.	1-8th	1-32nd
Serum from patient suffering from interstitial nephritis	1-8th	1-16th
Serum from patient suffering from parenchymatous nephritis...	1-16th	1-32nd
Serum from another patient suffering from parenchymatous nephritis	1-16th	1-32nd
Non-albuminous urine from normal man ...	1-32nd	1-32nd
Urine with trace of albumin derived from a patient suffering from cystitis due to infection by the bacillus coli	1-16th	1-16th
Urine with trace of albumin derived from a case of renal disease	1-32nd	1-32nd
Urine with trace of albumin derived from a case of renal disease	1-16th	1-16th
Highly albuminous urine from a case of renal disease	1-8th	1-32nd
Urine containing a considerable amount of albumin	1-5th	1-16th

[1] It will be manifest that in the case of the hæmolytic method we multiply our error of observation in each case by the factor which corresponds to the dilution we have arrived at.

VACCINATION EXPENDITURE.—At the meeting of the Penzance board of guardians held on March 25th it was decided to support the resolution passed by the Liskeard (Cornwall) board of guardians protesting against the greatly increased cost of carrying out the Vaccination Act and asking the Government to draw up a more economical system.

REMARKS ON THE RELATIONS OF PULMONARY TUBERCULOSIS TO OTHER DISEASES.[1]

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PULMONARY tuberculosis is so widely disseminated that it is not surprising to find it occasionally associated with nearly every other disease. It is partly on this account no easy matter to decide whether a given disease has any causal relationship whatever to pulmonary tuberculosis. The following questions arise: Is one disease favourable or antagonistic to the onset or spread of the other, or is there some more indirect relationship between the two diseases—for instance, that a certain state of the body which is opposed to one of the diseases is likewise either opposed or favourable to the other, or lastly, is the association of the two diseases merely accidental? These questions are often exceedingly difficult to answer. Statistics are mostly meagre or untrustworthy and in many cases we are driven back to general impressions of the various observers on the subject. I shall not have time to consider tuberculosis of the lungs in all its associations with other diseases but must limit myself to the question of its relations to certain constitutional defects and to certain diseases of the heart, liver, and kidneys. I shall not discuss its relations to other diseases of the lungs and air passages.

Relations of pulmonary tuberculosis to diseases of the heart.—Louis and Rokitansky[2] held that there was an antagonism between heart diseases and phthisis, but Traube[3] thought that there was no antagonism between aortic reflux and phthisis, whilst Peacock,[4] Traube,[5] and nearly all modern authorities find[6] that patients with congenital pulmonary stenosis, if they live to an age of about from 15 to 20 years, frequently die from tuberculosis of the lungs. On the whole it seems that conditions of the circulation which tend to passive hyperæmia of the lungs (not merely increased venosity of blood) have a hindering action on the growth of tubercle, whilst anæmia of the lungs favours tuberculosis. Thus it is maintained that active pulmonary tuberculosis rarely arises in the subjects of mitral reflux or of mitral stenosis, and cases have been observed in which the signs of pulmonary tuberculosis became much less marked and the disease became decidedly less active after the development of rheumatic mitral disease. It is said that tubercle bacilli have been found in vegetations from endocarditis, but even if we grant that their presence has once or twice been demonstrated Teissier's paper[7] as to the tuberculous origin of cases of mitral stenosis does not carry conviction with it.[8] It may here be mentioned that some medical men, influenced by Bier's writings on his method of treating tuberculosis of the joints[9] by artificially induced hyperæmia, have advocated the adoption of certain positions of the body and certain local thermal methods as part of the treatment of pulmonary tuberculosis,[10] with the object of increasing the amount of blood in the vessels of the lungs. In regard to the association of congenital pulmonary stenosis with tuberculosis of the lungs it must be remembered that this may be attributed not only to defective supply of blood

[1] A post-graduate lecture delivered at the Mount Vernon Hospital for Consumption on Feb. 11th, 1904.

[2] See the remarks on this subject in Wilson Fox's "Diseases of the Lungs," edited by Sidney Coupland, London, 1891, p. 547.

[3] L. Traube: Allgemeine Medicinische Central Zeitung, 1864, No. 100.

[4] Malformation of the Heart, second edition, London, 1866, p. 189.

[5] Traube: loc. cit.

[6] Vide Meissenburg: Zeitschrift für Tuberkulose, Leipzic, vol. iii., Part 5; and C. Fischer: ibid., vol. v., Part 3.

[7] Pierre Teissier: Clinique Médicale de la Charité, Paris, 1894, pp. 913-1009.

[8] See the criticism by Hugh Walsham, Brit. Med. Jour., 1899, vol. ii., p. 1170.

[9] August Bier: Behandlung Chirurgischer Tuberkulose der Gliedmaassen mit Stauungs-hyperämie, 1893; also Behandlung der Gelenkstuberkulose mit Stauungshyperämie, 1896. At first Bier confined himself to passive hyperæmia.

[10] E. Jacoby: Verhandlungen des XIV. Congresses für innere Medicin, Wiesbaden, 1896, p. 576, and Münchener Medicinische Wochenschrift, 1899, Nos. 19 and 20. On the "Postural Treatment" of Pulmonary Tuberculosis see also Schenk, Wiener Medicinische Wochenschrift, July 6th and 13th, 1901.

to the lungs but likewise to the general defective development of such patients, especially to a tendency to "infantilism" (see later section). Percy Kidd[11] says: "Such persons are born with imperfect lungs and it is not to be wondered at that these organs should be prone to so common a disease as tuberculosis."

Relations of pulmonary tuberculosis to diseases of the liver.—*Amyloid disease of the liver* is well known as occasionally due to suppuration connected with tuberculous disease in various parts of the body, but it is really only a very rare complication of tuberculosis of the lungs and, owing to modern surgical and other methods of treatment, it is doubtless becoming a much less frequent complication of tuberculosis altogether, even of hip disease and spinal caries. Enlargement of the liver from *fatty infiltration* is so frequently found in consumptive patients dying after prolonged hectic fever that a causal connexion between the two conditions is universally admitted. Most probably the glandular cells of the liver become so damaged by the febrile condition, or, rather, by the toxæmic cause of the pyrexia, that their metabolic functions become seriously impaired. Their feeble power of combustion is then shown by the accumulation of the fatty droplets. I should here state that probably there is no sharp demarcation line between fatty infiltration and fatty degeneration of the liver; the latter process is probably really a fatty infiltration in an atrophic liver when the hepatic cells have degenerated not only in functional power but in the amount of their living cell-substance also.[12] *Cirrhosis of the liver* is not very rarely found associated with peritoneal or pulmonary tuberculosis or both, and there are good grounds for believing that in a few cases hepatic cirrhosis may be due to a local tuberculous process.[13] In regard to the association of an ascitic form of tuberculous peritonitis with cirrhosis of the liver Dr. S. Gee[14] says: "Perhaps the tuberculous poison sets up cirrhosis, like alcohol, and one is reminded of a similar association of ovarian tumours with cirrhosis of the liver." There is, however, another and more generally acknowledged connexion between pulmonary tuberculosis and hepatic cirrhosis—namely, the fact that alcoholism may be a factor in the production of the pulmonary as of the hepatic disease. Osler[15] writes: "A remarkable feature is the association of acute tuberculosis with cirrhosis. In seven cases of my series the patients died with either acute tuberculous peritonitis or acute tuberculous pleurisy. Pitt states 22½ per cent. of the cases of cirrhosis dying in Guy's Hospital during 12 years had acute tuberculosis. Of 121 autopsies at the Manchester Royal Infirmary[16] in cirrhosis about 23 per cent. gave evidence of tuberculous infection. 12 of these had tuberculosis of the peritoneum and 12 died directly from the tuberculous infection." This naturally brings me to the following subject.

Relations of pulmonary tuberculosis to alcoholism.—Much has been written on the effects of alcohol in regard to consumption and there is still much difference of opinion as to the value of alcohol in the treatment of the disease. Yet one can well understand that if alcohol in moderate doses increases the patient's appetite, favours digestion, and makes him more cheerful, it may, by promoting the general nutrition of the body, indirectly help to check the progress of the tuberculous disease. On the other hand, abuse of alcohol, at least, chronic alcoholism, is now almost universally admitted to be a great predisposing cause of pulmonary tuberculosis. That this should be the case is not very surprising if one remembers how readily the subjects of chronic alcoholism fall victims to other diseases of microbic origin, such as acute pneumonia and septic inflammations. Chronic alcoholism favours degenerative processes all over the body and diminishes the resistant power of the tissues to microbic infection. The cells of the different parts of the body in alcoholism seem to become sluggish in regard to their metabolic functions so that the vital reactions of the tissues become less prompt and less efficient. This supposition explains the tendency to accumulation of fat in the liver and subcutaneous tissues and explains why pyrexia is often less marked and why alcoholics succumb more readily than others on very prolonged exposure to cold. Probably just as the tissues of alcoholics respond less readily than those of ordinary persons to demands for increased heat production, so in infective diseases their antitoxin-forming and other microbe-resisting powers are less efficient. The bloated type of alcoholic—for instance, the old style of brewer's drayman—has always been notorious for extreme liability to wound infection and acute septic gangrene following injuries and in such a person one can imagine that not only have the anti-microbic and antitoxin-forming functions of the cells of his body been dulled by the habitual action of alcohol, but even that, owing to his "bloated" condition, the really living portions of his body—namely, the cells—are abnormally separated from each other and therefore less able to cope with the intruding microbes. Be this as it may, French inquiries[17] into the subject as well as English observations[18] leave no doubt about the reality of the connexion between alcoholism and pulmonary tuberculosis. Moreover, the children of alcoholics are often born with deficient resistant power and thus fall an easy prey to tuberculosis. I must here state, however, that I believe it is going too far to regard alcoholism, as some writers on the subject have done, as the only connecting link between pulmonary tuberculosis on the one hand and peripheral neuritis and hepatic cirrhosis on the other. Cirrhosis of the liver may occasionally, as I have already mentioned, be of local tuberculous origin and polyneuritis may in some cases be due as much to the pulmonary tuberculosis itself as to any associated alcoholism, but to this I shall return later.

Relations of pulmonary tuberculosis to diseases of the kidneys.—Typical amyloid disease of the kidneys (I do not here refer to slight amyloid changes accompanying parenchymatous nephritis) is occasionally met with in cases of pulmonary tuberculosis but I believe it to be exceedingly rare. Parenchymatous nephritis[19] and forms of mixed parenchymatous and interstitial nephritis are, on the other hand, much more frequently found. They occur especially in patients with advanced pulmonary tuberculosis and in these cases the kidney disease is, I have no doubt, usually a result of the lung disease, of which it constitutes a most serious complication. I regard the nephritis in most of these cases as caused by irritation due to toxic substances absorbed into the circulation from the tuberculous and suppurating foci in the lungs, but it must be remembered that the nephritis may occasionally be associated with local tuberculosis and that the presence of tubercle bacilli has sometimes been detected in the kidneys, even in the absence of regular tubercles.[20] Here I would mention that slight amyloid changes, easily to be detected by examining microscopic sections stained with methyl violet, frequently accompany the changes of chronic parenchymatous nephritis, both in the case of consumptive patients and others. This is not surprising when one remembers the experience of N. P. Krawkow[21] and others regarding the artificial production of amyloid disease. Krawkow seems to show that amyloid disease is usually the result of absorption into the blood of products of the metabolism of parasitic microbes, and he actually succeeded in inducing amyloid changes in the tissues of a rabbit by repeated injections of the mere filtrate of a culture of the bacillus pyocyaneus.

Recurrent attacks of gout with typical chronic interstitial nephritis are relatively rarely[22] associated with pulmonary

[11] St. Bartholomew's Hospital Reports, London, 1887, vol. xxiii., p. 252.
[12] Cf. Ribbert: Die Morphologie und Chemie der fettigen Degeneration, Deutsche Medicinische Wochenschrift, 1903, No. 44, p. 793.
[13] Vibt A. Gilbert and J. Castaigne's case at the Société de Biologie, Paris, June 3rd, 1899.
[14] St. Bartholomew's Hospital Journal, London, May, 1900, p. 116.
[15] Quoted by J. M. Cowie: Tuberculosis, London, January, 1904, p. 27.
[16] T. N. Kelynack: Medical Chronicle, Manchester, 1897, vol. vi., p. 262.
[17] See F. Imbault's Paris thesis, 1901, for French work on the subject.
[18] See quotations and figures in T. N. Kelynack's "The Relation of Alcoholism to Tuberculosis." THE LANCET, August 3rd, 1901, p. 277.
[19] Cf. C. von Kahlden: Ueber Nephritis bei Phthisikern, Centralblatt für Allgemeine Pathologie, Jena, vol. ii., p. 97.
[20] Cf. Arthur Heyn: Ueber Disseminirte Nephritis Bacillaris Tuberculoser ohne Nieren Tuberkel, Virchow's Archiv, Berlin, 1901, vol. clxv., p. 42; also Hugh Walsham, Excretion Tuberculosis of the Kidney, Transactions of the British Congress on Tuberculosis (1901), London, 1902, vol. iii., p. 583; and likewise the authors quoted by Walsham.
[21] Centralblatt für Allgemeine Pathologie, Jena, 1895, vol. vi., p. 337; Archives de Médecine Expérimentale, Paris, 1896, vol. viii., p. 106; Archiv für Experimentelle Pathologie Leipsic, 1898, vol. xl., p. 194.
[22] In regard, however, to the kidney disease, without taking gout into consideration W. H. Dickinson (Diseases of the Kidney, London, 1875, p. 378) found tubercle in 20·8 per cent. of 250 persons dying from granular degeneration of kidneys, which, according to statistics, was less than the average frequency of tubercle in all post-mortem examinations. In a paper on the Association of Chronic Interstitial Nephritis with Pulmonary Tuberculosis (1892) I made out that in a series of 145 necropsies on patients over 40 years old with pulmonary tuberculosis (nearly all of whom had actually died from their lung disease) there was evidence of some degree of chronic interstitial nephritis in 40 per cent., whereas in a series of 44 necropsies on

tuberculosis. A good example is a case I described in 1892.[23] The patient was a sallow, thin man, aged 46 years, who died with uræmic symptoms in the Brompton Hospital in 1890. He gave a family history of consumption but said that his father had suffered from gout. He himself had been discharged from the Royal Navy at the age of 18 years on account of pulmonary phthisis. Afterwards his lung trouble improved and he enjoyed good health excepting for an acute attack of gout at the age of 31 years and four other attacks since then. In his forty-first year, however, he was troubled with cough and occasionally spat up some blackish blood. In the hospital he was found to have impaired resonance and signs of local disease over the upper parts of both lungs. Gouty swellings were noted in the fingers and toes. His urine was of low specific gravity and contained a good deal of albumin and a few granular casts. He suffered from uræmic vomiting and finally coma came on. Just before the end a uræmic eruption resembling eczema appeared all over his body and, though apparently unconscious, he was observed to be scratching himself continually. At the post-mortem examination the lungs showed no recent tuberculosis but extreme fibrosis around the caseous remains of former tuberculosis. Urate of sodium was seen deposited in the articular cartilage of one of the small joints which was examined. The heart was somewhat hypertrophied and the kidneys showed chronic interstitial nephritis. In this case and similar ones, although the kidneys may have been damaged at the time of (and as a result of) the previous active tuberculous process in the lungs, the chronic interstitial nephritis was doubtless intimately connected with the gout. This brings me to a consideration of the following subject.

The relations of pulmonary tuberculosis to gout and the effect of meat in the preventive and curative treatment of tuberculosis.[24]—Dr. J. E. Pollock[25] believes that "gout, like rheumatism, when the specific attack of the disease is developed in a case of tubercle, retards the latter." Sir Dyce Duckworth[26] supposes that gout or the gouty diathesis is antagonistic to phthisis. Sir Hermann Weber[27] knows of many persons who recovered from pulmonary tuberculosis but suffered from distinct gout in some form. In fact, many observers have held that there is a certain antagonism between gout and tuberculosis, and although there are great exceptions to the rule (notably in regard to gouty persons addicted to alcohol and gouty persons who have become generally decrepit) I believe that this antagonism does to some extent exist. This resistance of gouty persons towards tuberculosis is probably partly due to the meaty foods (butcher's meat, eggs, and all animal proteid foods) which most persons with acquired goutiness have been accustomed to indulge in freely during much of their lives. I referred to the subject in 1892 in a paper on the Association of Chronic Interstitial Nephritis with Pulmonary Tuberculosis, and I then suggested that there might be some substance circulating in the blood in gouty persons in minute quantities yet sufficient to have an antagonistic action towards the growth of tubercle and that perhaps this was likewise the case in persons taking an unusual amount of food, which "might partly account for the good result following the extra feeding of phthisical patients when duly assisted by hygienic influences."[28]

The wealthy classes on the whole are inclined to indulge excessively in animal food and by this means, in some countries at least, favour the development of gouty diseases. On the other hand, their mortality from pulmonary tuberculosis is relatively slight when compared to that of the poorer classes. In the case of large cities[29] in which the streets are classified first in regard to the wealth of the inhabitants, and, secondly, in regard to the mortality from consumption, this can be conclusively shown. Doubtless overcrowding and all kinds of bad hygiene play an immense part in determining the relatively great incidence of tuberculosis amongst the poor, but the insufficiency of meaty food is, I believe, likewise partly responsible. The poorest classes, though they often obtain abundance of carbohydrate food, can generally obtain very little of the more expensive meaty foods. Great meat eaters, if not alcoholic, rarely, even in the most unhygienic surroundings, become phthisical, and it may likewise be noted that in all charitable hospitals and sanatoriums for tuberculosis more animal food is provided than the patients, owing to their poverty, can generally obtain in their own homes, whereas many of them have been already accustomed at home to as much carbohydrate food as they care for. The want of resistance to disease shown by many children who have been fed with abundant carbohydrates and with too little animal proteids has been pointed out by various authors.[30] Charles Richet's[31] experimental comparison (*a*) of the effects of a mixed carbohydrate and meat diet with (*b*) the effects of an exclusive raw meat diet in dogs previously inoculated with tubercle is not without interest in this respect, but his results have not been entirely confirmed.[32] On the whole, I believe that deficiency of meat in the diet acts not rarely, especially in young persons, as a predisposing cause of the onset of pulmonary tuberculosis, and in such cases a change to a diet containing more meat may often have a most beneficial effect, especially, of course, if combined, as it always should be, with suitable general hygienic treatment. It is on the foregoing considerations that I base my opinion and not on the argument that because carnivorous animals generally show good resistance to tuberculosis therefore a meat diet must be the proper treatment for tuberculosis. To the latter argument it might be objected, as Woods Hutchinson[33] has suggested, that the great relative resistant power of carnivorous animals might depend on the survival of those of their kind in past generations who have not succumbed to infection from eating tuberculous animals, the families having died out the members of which succumbed easily to infection from eating tuberculous material.

Various explanations have been suggested for the beneficial action of meat in cases of tuberculosis. Richet and Héricourt[34] attach the greatest importance to the meat being raw and think that it is only the muscle plasma which is active, the parts of the meat which are soluble in water containing the active substance. Hence they term their method of treatment "zomotherapy"—that is to say, "meat juice therapy." Though it is admitted that myosin albumin[35] is easily digested by most patients and can be of great value, it is scarcely likely that the value of meat in the diet of consumptives or of persons predisposed to consumption depends entirely on the meat being raw or only very slightly cooked. It must be remembered also that a certain amount of cooked meat often powerfully stimulates the appetite and the digestion, and in some persons much more so than meat juice and raw meat do. Dr. H. Harper[36] taking into consideration the antagonism between tuberculosis, on the one hand, and gout and meat-eating habits on the other, introduced the treatment of consumption by pure urea, and according to his views much of the effect of meat eating on tuberculosis would be attributed to increased formation of urea. He says that from an extensive experience of urea in tuberculosis it is the only thing that he can call a remedy.[37] Though doubtless not in the largest possible doses, I for a time gave urea almost as a routine to my patients with consumption both at the Mount Vernon Hospital for Consumption and at the German Hospital. I thought I obtained some good results at first but afterwards I felt uncertain, and my later observations failed to convince me that the good results obtained in the early cases were really due to

patients over 40 years old with healed or quiescent pulmonary tuberculosis 61·3 per cent. showed evidence of chronic interstitial nephritis.

[23] On the Association of Chronic Interstitial Nephritis with Pulmonary Tuberculosis, 1892, p. 3.

[24] Cf. F. Parkes Weber: Zeitschrift für Tuberkulose, 1900, vol. i., p. 91.

[25] The Elements of Prognosis in Consumption, London, 1885, p. 273.

[26] See A Treatise on Gout, London, 1890.

[27] Discussion at the British Congress on Tuberculosis, Brit. Med. Jour., August 3rd, 1901, p. 317.

[28] On the Association of Chronic Interstitial Nephritis with Pulmonary Tuberculosis, London, 1892, p. 11.

[29] In regard to Paris compare Dr. E. P. Léon-Petit, "Le Phthisique et son Traitement Hygiénique," Paris, 1895; and in regard to London see Sir Hugh Beevor's oration on the Declension of Phthisis, at the Hunterian Society of London, 1899.

[30] Cf. J. Dvorak's remarks, Bericht über den Kongress zur Bekämpfung der Tuberkulose als Volkskrankheit, Berlin, 1899, p. 619.

[31] Académie de Médecine, Paris, Nov. 29th, 1899.

[32] See C. Fränkel and Sobernheim's paper, Zur Frage der Zomotherapie, Berliner Klinische Wochenschrift, July 15th, 1901; also Lawrason Brown's criticisms in the American Journal of the Medical Sciences, June, 1903 vol. cxxv., p. 1071. Brown agrees, however, that "much meat, with a judicious admixture of carbohydrates, fats, &c., is essential to the treatment of pulmonary tuberculosis."

[33] Quoted by Dr. Harry Campbell, THE LANCET, Feb. 16th, 1901, p. 496.

[34] Académie des Sciences, Paris, Feb. 26th 1900.

[35] See Lawrason Brown, loc. cit.; and F. W. Forbes Ross, Meat Preparations: the Possibilities of Myosin Albumin, THE LANCET, June 22nd, 1901, p. 1757.

[36] See his papers in THE LANCET, March 9th (p. 694), June 15th (p. 1672), and Dec. 7th (p. 1561), 1901; also in Brit. Med. Jour., Oct. 18th, 1902, p. 1235.

[37] THE LANCET, March 9th, 1901, p. 697.

the urea.[38] Moreover, there are theoretical difficulties in the way of accepting the claims made for urea.[39]

There still remain other points to be considered in regard to the effect of meat diets in tuberculosis. Striped muscle,[40] whether as part of a living body or as butcher's meat, is not a good soil for the growth of tubercle bacilli. Jacob and Pannwitz[41] say that all observers regard muscle as a bad culture medium for the bacilli and they give Röckl as an authority for the statement that the muscles are involved only in eight out of 1000 cases of tuberculosis. This may have a bearing on the meat diet question and likewise on several other questions. Thus it is a generally acknowledged fact that, on the whole, persons with well-developed muscular systems are more resistent to tuberculosis than persons with relatively small muscles. An active life is believed to diminish the chances of tuberculosis and it seems probable that this result is obtained not merely owing to the necessarily increased exercise of the lungs but likewise owing to the striped muscular system throughout the body being kept in good condition by muscular activity. Men with extreme *congenital* deficiency of the generative organs (absent or rudimentary testes with infantilism) seem to be more liable to pulmonary tuberculosis than the average. This has, I believe, been noted by several physicians. Recently I had a man, aged 29 years, under my care at the German Hospital suffering from a rather bad type of pulmonary tuberculosis. His generative organs were very imperfect (the right testis was very minute and the left one was absent) and the infantile voice, the feeble general development, and the absence of hair from the chin, &c., all corresponded to the extreme hypoplasia of the generative organs. Perhaps the poor muscular and general development in such cases is connected with the increased liability to tuberculosis, which may also, perhaps, be compared to the liability of other very imperfectly developed persons (with or without actual infantilism) —for instance, the subjects of congenital stenosis of the pulmonary orifice of the heart. (See previous section on this subject.) In this connexion it may be remarked that patients with idiopathic muscular atrophy (primary progressive myopathy) seem specially liable to be attacked by pulmonary tuberculosis, but in these cases the weakening of the respiratory muscles must likewise be taken into consideration.

Whilst still on the subject of meat in tuberculosis I must allude to a recent paper by Dr. J. J. Galbraith[42] who strongly advocates a diet rich in animal nitrogen. He finds that by such a diet together with the regular open-air method of treatment a certain change in the blood is effected. The characteristic features of the change, according to him, are (1) a moderate constant leucocytosis; (2) a large absorptive lymphocytosis; and (3) an almost constant eosinophilia (the eosinophile cells varying from 4 to 5 per cent. of the total leucocytes). Dr. Galbraith likewise maintains that from some cause or other the bodies of consumptive patients are relatively and absolutely deficient in nitrogenous constituents and that though there is wasting of subcutaneous fat there is extensive storage of fat in the viscera which would be drawn upon were this material mainly needed. He concludes that in pulmonary tuberculosis a meat diet supplies a direct physiological want. In connexion with Dr. Galbraith's remarks on fat I will add that obese persons, especially those of the ruddy and plethoric type of obesity, who generally possess a strongly developed muscular system and who are often great meat eaters, are, as one would expect, unless they have become victims of alcoholism, rarely or hardly ever the subjects of phthisis. I have, however, during recent years frequently seen a woman, now aged 43 years, of the flabby-fat type, who suffers from pulmonary tuberculosis. In her case the fatness apparently followed cophorectomy; at all events, she underwent an abdominal operation eight years ago which was followed by permanent amenorrhœa and great increase in weight. I know also of one man of the full-blooded stout type with a genial ruddy face and fond of good dinners who ultimately died from pulmonary tuberculosis but only after suffering from diabetes mellitus with great wasting. On the other hand, in a fat man at present under my care a fear of consumption seems to have been the starting point of the obesity. This patient when fifteen years old was told that he was threatened with consumption and either of his own accord or under advice he began to eat as much as he could and more than he felt inclined to. He is now 24 years of age and I can find no signs of pulmonary tuberculosis, but he has become obese and inactive, his aspect is plethoric, his pulse too frequent, his lips are livid, and his legs slightly œdematous.

The relations of pulmonary tuberculosis to cancer.—It has been maintained that a certain antagonism exists between cancer and tuberculosis. If that is the rule there are certainly a good many apparent exceptions. Quite recently I had a patient at Mount Vernon Hospital, a young woman, aged 31 years, suffering from well-marked pulmonary tuberculosis, with cavity formation in the upper lobe of the right lung. She had also a rapidly growing carcinoma involving the lowest portion of the pharynx—that is to say, the entrance of the œsophagus. Moreover, in the post mortem room one occasionally meets with evidence in the lungs of active tuberculosis (recent miliary tubercles) in cases of fatal carcinomatous stricture of the œsophagus. In such cases I am inclined to think that the chronic starvation due to the œsophageal stricture by lowering the general vitality of the patient induces the quiescent remains of some previous tuberculous trouble to break out afresh. If there is really any antagonism, as many have believed, between cancer and pulmonary tuberculosis I believe it must be an indirect one. Indeed, in the first place, patients suffering from cancer are mostly of an age not specially liable to tuberculosis; and in the second place, I think one may say that, on the whole, cancer has a tendency to attack robust persons, "good livers," and those who have always had plenty to eat—in fact, persons drawn from a class relatively resistant to pulmonary tuberculosis.

The relations of tuberculosis to lymphadenoma and leukæmia.—Lymphadenoma (pseudo-leukæmia, Hodgkin's disease), unlike cancer, tends to become associated with tuberculosis. A typical example of this association is the following case.

The patient, a girl, had some enlarged glands removed from the right side of the neck in March, 1898. In March, 1901, when 14 years old, she was an in-patient under my care at the German Hospital with anæmia, an enlarged spleen, and moderate pyrexia. She improved considerably under arsenic treatment and after the middle of April was practically free from fever. Whilst under treatment I may mention she had a slight attack of arsenical herpes zoster. In April, 1902, the patient was again in the hospital and in June I noticed that the spleen reached to within half an inch of the anterior superior spine of the ilium. The liver could be felt below the costal margin. In the latter part of June the patient suffered from a short acute attack of pneumonia at the base of the left lung. She left the hospital in July, but was troubled with a good deal of cough and occasionally a little mucous expectoration, sometimes streaked with blood. She was readmitted on Nov. 7th, 1902, with moderate ascites and œdema. Some crepitation could be heard over the left lung. No tubercle bacilli were found in the sputum. The blood showed extreme anæmia with relative leucocytosis; the hæmoglobin was only 30 per cent. of the normal. The urine contained a trace of albumin. There was very little fever, but the general weakness increased and death occurred on Dec. 1st. The necropsy showed enlarged glands in the neck, posterior mediastinum, and abdomen. A few of the glands seemed slightly caseous, especially some not very large ones at the root of the lungs. A hard fibrous mass situated at the back of the upper part of the abdomen and displacing the stomach and liver forwards had microscopically the appearance of chronic hard lymphadenoma. The spleen weighed 26 ounces and contained some whitish masses ("hardbake" type), one of them approaching caseation. There was a considerable serous effusion in the peritoneum with some matting together of the abdominal viscera (probably due to peritoneal tubercle). The lungs showed scattered tubercles and by microscopic examination minute tubercles were detected

[38] Cf. the adverse conclusions arrived at by S. Vere Pearson in his paper on Pure Urea in the Treatment of Chronic Pulmonary Tuberculosis, THE LANCET, Nov. 22nd, 1902, p. 1383.

[39] See the remarks on this subject by A. W. Gilchrist, "The Low Phosphates and Urea in the Urine of the Tuberculous," THE LANCET, Nov. 29th, 1902, p. 1456.

[40] See Part III. of the Report of the Royal Commission to Inquire into the Effect of Food derived from Tuberculous Animals (London, 1896).

[41] "Entstehung und Bekämpfung der Lungentuberkulose," Leipsic, 1901, vol. 1., p. 262.

[42] The Dietetic Treatment of Pulmonary Tuberculosis from the Point of View of its Hæmatology and Histopathology, Brit. Med. Jour., March 14th, 1903, p. 600.

the liver and spleen. Tubercle bacilli were seen in specially stained sections of the liver and (what is much more remarkable) in the bone marrow from the shaft of the left humerus.

The association of lymphadenoma with tuberculosis has been repeatedly described in medical journals and has constituted a subject for discussion at medical societies. Some observers have gone so far as to suggest that all the cases in question are tuberculous—in fact, that lymphadenoma is a variety of glandular tuberculosis. In the discussion on Lymphadenoma in its Relation to Tuberculosis at the Pathological Society of London, in December, 1901, Dr. F. W. Andrewes[42] concluded that lymphadenoma is a distinct disease, not due to the action of the tubercle bacillus; that there is a form of tuberculosis of the lymphatic glands clinically indistinguishable from lymphadenoma; that a fair number of cases of lymphadenoma occur in which secondary infection with tubercle has taken place; and that this secondary infection may be local and unimportant, or the patient may die from generalised tuberculosis with a mixture of lesions of the most puzzling kind. It was such a mixture of lesions that the case to which I have just alluded showed. Cases of this kind should be separated from cases of multiple tuberculosis of lymphatic glands. There are doubtless, as Dr. Andrewes says, some cases of the latter class which cannot be distinguished clinically from lymphadenoma (Hodgkin's disease), but there are also cases which can be recognised during life (without "bioscopic" help, including exploratory operations, of any kind and without even the use of tuberculin), as examples of chronic multiple tuberculosis of lymphatic glands. They may be diagnosed (1) by there being no, or only very slight, enlargement of the spleen or liver; and (2) by there being evidence of associated pulmonary tuberculosis.[44] Such a case I have at present under observation at the German Hospital.

The patient, a married woman, aged 32 years, is a fairly "well-nourished" woman with a rather florid complexion. The lymphatic glands of each side of the neck and of the right axilla are enlarged. The inguinal glands are enlarged but not more so than they are in many healthy persons. The spleen and liver do not seem abnormally large. The patient first came under observation in October, 1903. She knew that the glands in the right axilla were affected two and a half years previously. But those in the neck had only been enlarged during the last six months. She had lost weight and presented physical signs of slight tuberculosis of one lung. The blood showed that there was no great anæmia: hæmoglobin, 90–95 per cent.; red cells 4,600,000, and white cells 12,000, per cubic millimetre. The urine was free from albumin and sugar. In the hospital her general condition has remained about the same.

Several cases have been published illustrating the association of tuberculosis with leukæmia (mostly cases of lymphatic leukæmia[45]). It has been observed that after tuberculous infection there are often retrogression in the size of the spleen and lymphatic glands and diminution in the number of the white cells in the blood; for this reason Professor H. Quincke of Kiel,[46] has even suggested the employment of tuberculin in leukæmia. Retrogression of leukæmic symptoms has also been observed as a result of erysipelas[47] and other microbic invasions. Susmann[48] suggests that the excess of nucleo-albumin and the increased phagocytic power of the blood in leukæmic patients may exercise an antagonistic action in regard to tubercle. It is not certain, however, that leukæmia is really antagonistic to tuberculosis, though tuberculosis seems to check the progress and even to cause retrogression of leukæmia.

The relations of pulmonary tuberculosis to diabetes mellitus.—Pulmonary tuberculosis is well known to attack not very rarely patients suffering from grave diabetes, and Sir Lauder Brunton[49] has suggested that the presence of sugar in the tissues facilitates the growth of microbes and renders diabetics peculiarly liable to certain bacterial affections, pulmonary tuberculosis amongst others. Though tuberculosis is a most unfavourable complication of diabetes a diminution in the sugar, or even its complete disappearance from the urine, is occasionally observed to follow the onset of the pulmonary disease. The cautious employment of tuberculin might, as far as I can see, be proposed for diabetes as it has been for leukæmia. And probably with as little likelihood of success, for one must remember that the diminished excretion of sugar in diabetics when they become consumptive may, as has been suggested, be due merely to the pyrexia or the mixed bacterial toxins causing pyrexia; moreover, disappearance or diminution of the sugar may be a temporary result of other microbic invasions, accompanied by pyrexia, besides tuberculosis.

The relations of pulmonary tuberculosis to syphilis.—A certain amount of antagonism between syphilis and tuberculosis has been supposed to exist by some medical observers, but many authorities, especially the majority of French writers, think that syphilis by lowering the general powers of resistance to disease predisposes persons to tuberculosis. It has even been suggested, I believe, that a reason why syphilitic gummata are so rarely seen in the lungs is that a counter-infection with tubercle bacilli generally occurs, so that a case of pulmonary syphilis is generally transformed into one of pulmonary tuberculosis.[50] Whether persons who have had syphilis are more easily, or less easily, infected with tubercle than persons who have never had syphilis is a question which for obvious reasons cannot easily be answered. It has been supposed by some that syphilis, like alcoholism, in the parents renders the children peculiarly liable to pulmonary tuberculosis.[51] I formerly repeatedly saw an intelligent man who was suffering from pulmonary tuberculosis, and also from fibrous stenosis of the larynx for which tracheotomy was performed. In 1899, when I first saw him, he was 41 years old, and had had a form of lupus verrucosus of the right hand for 18 years. He was dumb and almost completely deaf. The presence of pulmonary tuberculosis was made certain by a marked general reaction following the injection of half a milligramme of Koch's old tuberculin and afterwards by the discovery of tubercle bacilli in the sputum. Mr. R. Lake, who operated on the patient's larynx in the Mount Vernon Hospital, believed the great amount of old cicatricial tissue he met with to be of syphilitic origin and the supposition of congenital syphilis would probably account for both the laryngeal and aural conditions present. In spite of his unfavourable circumstances he seemed rather resistant to the progress of the tuberculous disease. He died at his own house, I heard, in February, 1903, but I am uncertain of the exact cause of his death.

The relations of pulmonary tuberculosis to multiple neuritis.—It is generally recognised that some causal relationship exists to account for the relatively frequent association of multiple neuritis of the alcoholic type with pulmonary tuberculosis. Dr. H. W. G. Mackenzie[52] says that it is almost invariable to find tubercle present in the lungs in patients dying in the course of alcoholic paralysis. The frequency of this association has been used as an argument to prove that alcoholism creates a predisposition to tuberculosis. It doubtless can do so, and I have already considered that subject, but it is no longer supposed as, I believe, it formerly was that any case of multiple neuritis affecting the lower extremities is necessarily due to alcohol. It is notorious that those most addicted to alcohol are not always the ones that suffer from neuritis. Given exciting cause or causes of polyneuritis it is evident that all persons are not equally affected by them, some being more liable than others (for instance, women more so than men). In those who are specially predisposed it is probable that tuberculosis (or rather a toxæmic condition arising from pulmonary consumption), like several other microbic diseases, may act as an exciting cause in association with alcohol or even independently.

Harley-street, W.

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[42] Transactions of the Pathological Society, London, vol. liii., p. 314.

[43] Cf. Professor Baumler's paper, Multiple Lymphdrüsentuberkulose, at the recent "Oberrheinischer Aerztetag" on July 16th, 1903. (Münchener Medicinische Wochenschrift, 1904, No. 1.)

[45] See W. J. Susmann's table of cases, Practitioner, London, October, 1903, p. 556; W. Neutra, Zeitschrift für Heilkunde, Vienna, 1903, vol. xxiv., p. 349 (with bibliography); H. Quincke, Deutsches Archiv für Klinische Medicin, Leipsic, 1902, vol. 74, p. 445; and G. Carpenter, Medical Press, Jan. 28th, 1903, p. 79.

[46] Quincke: Loc. cit.

[47] See H. Zinkeisen's second case, Deutsches Archiv für Klinische Medicin, Leipsic, 1903, vol. 75, p. 505.

[48] Susmann: Loc. cit.

[49] "Disorders of Assimilation, Digestion, &c.," London, 1901, pp. 53, 54.

[50] Compare J. Patoir's observations in Presse Médicale, Paris, Jan. 16th, 1901, p. 25.

[51] See J. Goldschmid: Münchener Medicinische Wochenschrift, 1901, No. 9, p. 344.

[52] In G. A. Gibson's Text-book of Medicine, 1901, vol. i., p. 35. See also T. N. Kelynack, Medical Chronicle, Manchester, 1896, vol. iv., p. 180.

TWO CASES OF "CORSET CANCER," WITH REMARKS ON THE ORIGIN AND SPREAD OF CANCER.[1]

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MUCH attention is now being directed to the origin and spread of cancer and, whilst a committee of investigation is at work to endeavour to track the disease to its initial causation, any new site of origin to which attention has not been directed may be of interest to the profession. I have therefore taken this opportunity of drawing attention to a mode of onset—I am almost inclined to say mode of entry—in the immediate neighbourhood of the breast which at first is not in the breast and only spreads to the breast secondarily or by extension contact. Three cases of this mode of origin have recently been under my care but the report of one of them has unfortunately been mislaid and I can only give the details of two.

The site where this carcinoma attacks the skin and cellular tissue is over an upper and outer radiant from the nipple corresponding exactly to the point where the upper edge of a corset crosses the edge of the pectoralis major muscle. It occurred on the right side in each case and in women whose occupations led them to an undue use of the right arm and in consequence to an excessive friction of the upper edge of the corset over the edge of the pectoralis major muscle at the point indicated. The friction of the corset at this spot is therefore the cause of the cancerous process developing in this situation and to express the fact I have given it the name of "corset cancer."

CASE 1.—The first case was that of a single woman, aged 47 years, who was admitted under my care in Guy's Hospital on Oct. 30th, 1901. Her parents were both living and healthy at an advanced age and previously to her admission her general health had been always good. She was a worker in a fur factory and her employment for years had been to scrape the fur of rabbits' skins with a blunt knife so as to draw out all the long hairs and to reduce them to a uniform low level, after which they were dyed to imitate seal-skins and other valuable furs. For many hours every day her arm was carried backwards and forwards in this work and her pectoral muscle moving to and fro whilst she leaned over her bench pressed the soft tissues injuriously against the upper edge of her corset. In March, 1900, the patient first noticed a hard swelling of about the size of a nut situated above, and to the outer side of, her right breast. It continued to grow, remaining hard and painless except when pinched or pressed upon. After a time she noticed that the pressure of the corset in her work caused her pain and she left off wearing it. A month before her admission the lump broke down and began to ulcerate. When admitted she had the appearance of a stout, plethoric, healthy, middle-aged woman. Above, and to the outer side of, the right breast close to the anterior fold of the axilla was a round raised ulcer about one and a half inches in diameter with a definite raised margin and a discharging surface. Underneath the ulcer could be felt a hard lump of about twice the diameter of the ulcer but freely moveable and in no way adherent to any deeper structure. The patient's appetite was good, the bowels were regular, and the temperature was normal. On the back of the patient's neck was a red serpiginous rash running in incomplete circles and curved lines and tending to desquamate. When seen by me on Nov. 1st it was diagnosed as a case of "corset cancer" but as the serpiginous eruption gave a suspicion of syphilis five grains of iodide of potassium were given every six hours. On the 9th the report stated that she had been ailing with loss of appetite and pains in her right arm, wrist, and hand, and also in the right thigh. On the 19th the pains in her joints had ceased and no effect had been produced on the ulcer by antisyphilitic remedies. It was therefore determined to remove the growth. A.C.E. mixture was administered and an elliptical incision in a transverse direction was made to include the growth. The incisions were carried through the edge of the breast and cellular tissue down to the pectoral muscle, the fascia of which was dissected up. From the centre of the upper incision another, three or four inches in length, was carried up into the axilla and the growth with glands and adipose tissue of the axilla were all dissected out together. During the operation some discharge escaped from the deeper parts of the growth and contaminated the wound. It was brought together with catgut and a gauze drain was introduced below. On the 25th some suppuration was noticed and the wound was thoroughly washed out with 1 in 500 of formalin and packed with cyanide gauze soaked in formalin. On the 30th the wound was cleaner and the temperature was normal. The patient was discharged on Dec. 22nd. A microscopic examination of the tumour showed the growth to be carcinomatous. On Oct. 27th, 1902, she was readmitted with a hard red growth over the upper aspect of the breast and two smaller ones, one being in the axilla. On the 30th an anæsthetic was administered and they were all separately excised. She was discharged on Nov. 24th. On Oct. 9th, 1903, she was readmitted with several secondary growths about the skin over her right breast. There were no growths in the axilla. The whole area affected, including the breast, was excised on Oct. 20th. A part of the wound was left to granulate. She made good progress and was sent to a convalescent home on Nov. 4th, 1903.

CASE 2.—The second case was that of an unmarried woman, aged 59 years, who was admitted into Guy's Hospital under my care on Nov. 4th, 1903, for swelling and pain near the upper and outer edge of the right breast. She had been employed for 36 years in a laundry, carrying the iron backwards and forwards over the linen for many hours every day. In appearance she was a tall, rather slight, delicate woman. She had had pleurisy twice and on one occasion an abscess in her neck. On the outer side of the superior external quadrant of the right breast was a small hard tumour causing a distinct dimple in the skin. It corresponded exactly with the friction level of the upper edge of her corset as it crossed the margin of the pectoralis major muscle. The tumour formed a depression of about the size of a shilling by its firm adhesion to the skin but was freely moveable on the tissues beneath. The breast and the nipple below were normal. One small gland was to be felt in the axilla. On Nov. 10th an anæsthetic was administered and the tumour was excised. The incision was carried on into the axilla and the gland was excised. The tumour removed was proved to be a carcinoma by microscopic examination. She was convalescent at the end of a week and was discharged from the hospital on the 18th but unfortunately the small wound left became contaminated at her home and she was readmitted with suppuration and a high temperature on the 30th. The wound had to be opened up as well as an abscess which had formed in her gluteal region, after which she recovered.

I have placed these two cases together for comparison and it will be noted that they were both single women advanced in life who had worked hard to gain a livelihood by their own exertions. In each case the tumour commenced in precisely the same position on the axillary margin above, and to the outer side of, the right breast and each patient had herself noticed the injurious effect of the margin of the corset upon the spot where the tumour developed. The movement of the right arm to and fro in their work was again very similar in the two cases, the first woman having been employed for years in scraping the fur of rabbits' skins and the second for no less than 36 years in ironing in a laundry. To my mind, to use the phrase of a late distinguished politician, "there can be no shade of a shadow of a doubt" that the injurious friction of the margin of the corset for many years was the determining cause of the cancer developing at this particular site.

Local irritation and lowered vitality determine the site.—This is but a new illustration of a well-established fact that different forms of carcinoma are apt to attack parts the vitality of which has been lowered or the resistance of which has been lessened by chronic irritation, neglected ulceration, or cicatrisation. It was long ago pointed out that epithelioma was apt to commence on the edges of orifices where mucous membrane joined the skin and by a curious coincidence last October there were in my ward for males at the same time a case of rodent ulcer attacking the lower eyelid, a case of epithelioma of the lower lip, a case of epithelioma of the prepuce and

[1] A paper read before the Brixton Medical Society on March 17th, 1904.

glans penis, and one of the margin of the anus, cases forming an interesting group on which to found a clinical lecture. It is easy to surmise why the cancerous process favours these situations since the covering is there tender and at the same time more exposed to injury and infection than other parts of the body. The facts that cancer of the lower lip rarely occurs except in pipe smokers and that epithelioma of the prepuce is commonly associated with phimosis or else commences in the scar of an old chancre give further support to the same view. Paget's eczema of the nipple preceding cancer of the breast and chimney-sweep's cancer attacking the scrotum, where the large sebaceous glands have long been choked with soot, are both well-recognised incidents in causation.

Relation of syphilis to cancer.—I should like now to point out how frequently syphilis is the forerunner of cancer in various situations where it leaves its injurious effects, and possibly one of the many causes contributing to the increase of cancer is the unchecked distribution of this disease. I have already alluded to epithelioma attacking the sites of old chancres on the penis. In two cases of amputation of the penis for cancer that I have performed within the last few months the patients declared that the growth commenced in the scars of old chancres. Next the chronic glossitis of the tongue, which commences with the secondary stage of syphilis and is kept up by smoking and by foul, irregular, and decayed teeth, is the most frequent precursor of epithelioma of the tongue. I hold it most important advice to insist on patients giving up smoking during the treatment of the secondary stage of syphilis, lest this affection should run on into that incurable stage of white scarring and thickened epithelioma, which has been described under many names, such as leucoplakia, psoriasis, and ichthyosis, and for which in the advanced stage, being struck by the resemblance it presents to the appearance of a parrot's tongue, I suggested many years ago the term "psittacosis." Epithelioma may attack the cheek, tonsil, palate, and larynx long after the ulceration due to syphilis in these situations has healed. Epithelioma of the tongue, which is so common in men as compared with women, is probably in the main attributable to these two causes—syphilis and smoking. In all my professional experience I have only once removed a tongue from a woman for epithelioma and in this case there was a distinct syphilitic history. She had been infected with syphilis on marriage about 15 years before and had suffered from recurrent ulceration of the tongue ever since, followed by leucoplakia. At the time I operated upon her she had an epitheliomatous ulcer of the tongue and enlarged glands in the neck which I removed at the same time. I have met with three cases in which cancer of the rectum followed syphilitic stricture of this part of the bowel; two of these were in women and one was in a man. In the latter case I operated on the syphilitic stricture when it had contracted as a cicatricial valve, so small that it did not admit the tip of one's forefinger, by incising and then dilating with large bougies. The patient was told to keep the stricture dilated by passing a bougie twice a week. About three years later he began to suffer from blood and slime with his motions and on re-examining him I found a new growth in the circumference of the bowel. I performed a colotomy and he lived for three years after, but eventually the growth penetrated the os innominatum and formed a large tumour at the junction of the left loin and buttock and he gradually sank.

Inoculation, contagion, and infection.—I now come to the question of contagion and infection in relation to cancer and I am inclined to think that if special investigation were directed to this subject it would not be difficult to arrange some very important facts in support of these modes of origin. In THE LANCET of Oct. 8th, 1887, p. 727, the following paragraph appeared: "M. Duplouy of Rochefort reports a case where a man, who had for a long time carefully nursed his wife, who was suffering from uterine cancer, became affected with epithelioma of the glans penis, necessitating amputation. The question arises, Is this a mere coincidence, or does it point to the possibility of a cancer being transmitted by contagion?" A few weeks later Mr. T. G. Laslett[2] wrote: "In 1883 a man was admitted into the Liverpool Infirmary suffering from epithelioma of the penis. He stated that his wife had died some time before of cancer of the womb and he though this complaint was something which he had contracted from her." Dr. E. Hooper May[3] also wrote: "In 1883 a patient of mine, aged 53, died with cancer of the uterus and I have since been informed that in 1886 her husband, aged 57, had to submit to amputation of the penis for cancer, of which complaint he died a few months ago." Since that time I have operated on one case of epithelioma of the penis in a man who stated that his wife died from cancer of the womb some time before his disease commenced.

These cases present a strong probability of contagion by inoculation where the circumstances are peculiarly favourable for such a mode of transmission. Against contagion it has been urged that cancer cannot be inoculated in the lower animals from man and, though this appears to be true, recent observations clearly show that cancer occurring in the lower animals can with great certainty be inoculated into another animal of the same species. In 1889 Hanau,[4] finding a rat suffering from cancer, was the first to prove that the disease could be conveyed by inoculation to other rats. Moran[5] in 1894 conveyed the disease from a cancerous mouse to other mice. Jensen[6] of Copenhagen has made some hundreds of transmissions of cancer from mice to mice, and these observations have been confirmed in this country quite recently by Dr. E. F. Bashford and Dr. J. A. Murray.[7] The tumours sent over sterile from Copenhagen were used here five days after posting and reproduced the disease in mice. According to these observers the cells inoculated grow and the tumours produced arise from the actual cells introduced without any participation of the cells of the host. Borrel[8] of the Pasteur Institute has gone further and has shown that the disease may be conveyed by natural means. He placed two cancerous mice in a cage with several sound ones and as a result found that five or six of the latter became cancerous. In the human subject there are often seen cases of metastasis by transplantation or self-inoculation where one surface affected with cancer has been allowed to rub against a sound surface. I have several times seen patches of epithelioma on the inside of the cheek immediately opposite to, and independent of, a cancer of the jaw or tongue produced apparently by inoculation. But the most striking cases of this kind are one by Williams[9] of cancer of the thigh spreading to the opposite thigh and one by Cripps of cancer of the skin of the arm caused by contact with an ulcerating cancer of the breast.

It would follow from these observations that cancer is transmissible by direct inoculation from one part of a cancerous person to another part, that it is inoculable in animals of the same species from one suffering from cancer, and that sound animals mixed with cancerous animals of the same species may in this way acquire cancer. It seems highly probable therefore that it is in some degree both inoculable and contagious among human beings. This leads me to speak of infection or transmission among persons living under the same roof and under similar conditions.

Cancer houses.—I think my own observation of three persons living together in the same house was the first to direct attention to cancer spreading in this way which Mr. D'Arcy Power[10] has done much to elaborate since. My observation was published in THE LANCET of Nov. 12th, 1887, p. 985, in a letter under the title, "Is Cancer Contagious?" I then wrote as follows: "The following curious instance of three different forms of cancer, occurring in three individuals living together in the same house may some day receive an explanation other than that of mere coincidence. In 1881 and again in 1883 I operated on a gentleman suffering from rodent ulcer of the eyelid and forehead. He is still living but with a return of the growth. In 1884 I operated on his wife for scirrhus of the breast and during the past week a partner who has always lived in the same house with them, has come under my care with epithelioma of the tongue. I would not suggest that there is of necessity anything more than accidental association between these cases, but the coincidence is the more interesting in that there is no blood relationship between them." The three forms of cancer here alluded to are all of the squamo-epithelial variety and therefore not widely separated in

[2] THE LANCET, Oct. 29th, 1887, p. 888.

[3] THE LANCET, Nov. 5th, 1887, p. 918.
[4] Fortschritte der Medicin, 1889.
[5] Archives de Médecine Expérimentale, 1894.
[6] Jensen: Centralblatt für Bakteriologie, I., Band xxxiv., 1903.
[7] THE LANCET, Feb. 13th, 1904, p. 415.
[8] Annales de l'Institut Pasteur, 1903.
[9] Williams: Brit. Med. Jour., 1887, p. 1369.
[10] Brit. Med. Jour., 1899-94-96.

structure and may be conceived to be produced by the same exciting cause modified by the tissue inoculated. Since that time I have met with a good many cases in which two cases of cancer have occurred in the same house.

Resemblances in cells of malignant growths to those of reproductive tissues.—Within the last six months much interest has been elicited by a paper showing that changes which take place in the nuclei of cancer cells undergoing multiplication exactly resemble the changes which take place in the ripening of reproductive cells. This paper was read before the Royal Society on Dec. 10th, 1903,[11] and the observations were confirmed by Dr. Bashford and Dr. Murray in a paper before the same society read on Jan. 21st, 1904.[12] To make this clear I may mention that "chromosomes" is the term applied to rod-like bodies within the nuclei which stain with aniline dyes. These have been closely studied by von Hansemann (1893) who found the amount of chromatin to vary and to express which he used the terms "hyperchromatosis" and "hypochromatosis" in relation to the cells of malignant growths. But the value of the work of Professor Farmer, Mr. Moore, and Mr. Walker lies in the demonstration that the central cells of all cancer growths entering into mitosis have the number of chromosomes reduced to just half the normal number, whilst the form of the chromosomes is changed from an elongated thread-like V-shaped chromosome to a short ring-like form. This reduction to half the number of chromosomes is precisely what is observed in the reproductive cells of both plants and animals undergoing mitosis, and has led the observers to conclude that malignant growths are virtually reproductive tissue occurring in abnormal situations. Whilst this power of reproduction illustrates the manner in which cancer growths rapidly increase in size it does not to my mind explain in any way why particular cells of any organ of the body should start this heterotype mitosis in imitation of the normal reproductive cells. Moreover, the value of this observation as an explanation of cancer causation is much weakened by the fact that the same kind of cell division with reduced number of chromosomes is observed in sarcomata—tumours which clinically as well as microscopically are widely separated from true carcinomata. I am inclined, therefore, to regard this valuable new observation as serving to demonstrate to us the manner in which the cells of sarcomata and carcinomata so rapidly multiply by imitating the processes normal to the reproductive cells, but beyond this there must lie a cause which compels them to take on this exceptional process. That cause still remains to be demonstrated.

To sum up the points of this short paper: 1. I have demonstrated a site of origin of cancer dependent upon the friction of the upper edge of a corset where it crosses the anterior fold of the axilla. To this I have so far attached no theory save that of chronic irritation, but supposing cancer to be due to an organism introduced from without, the rubbing in of such organism at this spot might aptly be compared to the rubbing in of staphylococci on the back of the neck by the collar in the production of boils and carbuncles. 2. Allusion was next made to other recognised sites of origin associated with irritation and especially to the points of junction of mucous membrane with skin. 3. I then attempted to show how syphilis, producing injurious effects in numerous situations, often proved to be the forerunner of cancer. 4. Next inoculation and contagion were considered; the proved inoculability of cancer in animals of the same species; the self inoculation in the human subject of parts in contact but not continuous; and the probable communication of the disease in certain cases from wife to husband. 5. The infection of cancer was then spoken of and my original observation of three persons having cancer at the same time in the same house, published in 1887, was quoted. 6. The recent observations of Professor Farmer, Mr. Moore, and Mr. Walker as to the resemblance of the mitotic changes of cancer cells to those normal in the reproductive cells of plants and animals were alluded to as of great interest, showing why in both cancers and sarcomata there exists such an immense power of multiplication of cells, but why the cells assume this heterotype mitosis still remains to be demonstrated.

Wimpole-street, W.

[11] Resemblances exhibited between the Cells of Malignant Growths in Man and those of Normal Reproductive Organs, by Professor J. B. Farmer, Mr. J. E. S. Moore, and Mr. C. E. Walker, THE LANCET, Dec. 26th, 1903, p. 1830.

[12] THE LANCET, Feb. 13th, 1904, p. 413.

A TOPOGRAPHICAL AND CLINICAL STUDY OF FIBROIDS OF THE NECK OF THE UTERUS (CERVIX FIBROIDS).

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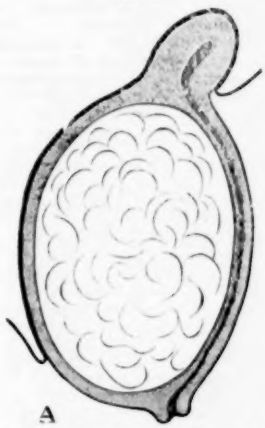
IN May, 1897, I exhibited at the Obstetrical Society of London some large specimens of fibroids growing in the neck of the uterus and drew attention to the fact that tumours of this kind had not received adequate attention at the hands of those who had given close attention to the surgery of the uterus. These tumours are by no means rare, they possess very characteristic features, and sometimes offer formidable difficulties when submitted to operation. In order to obtain some notion of their relative frequency I carefully analysed 500 cases of fibroids which have been under my care for operative treatment during the past eight years and find that in every 100 cases there will be five in which the fibroids occupy the cervix, and of these five, three, and sometimes four, will be fibroids exceeding the dimensions of a fist; in the early stages of growth cervical, like the common forms of uterine, fibroids are more or less globular, but when they exceed this size tend to become ovoid. Fibroids may grow from any part of the cervix; commonly they arise from its walls in such a way as to occupy the cervical canal (Fig. 1). These are

FIG. 1.



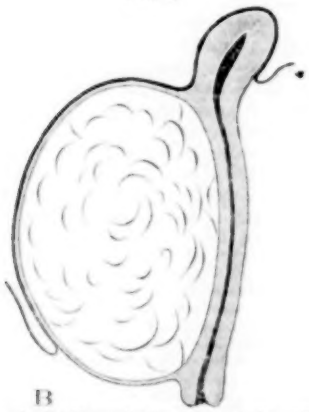
A diagram to show the relation of an intracervical fibroid to the cervical canal.

known as intracervical or submucous cervical fibroids. Less frequently they grow from the periphery of the cervix and do not invade the canal but burrow under the peritoneum on the anterior or the posterior aspect of the uterus (Figs. 2 and 3). These are known as subserous cervical fibroids.

The oval character of the cervical fibroid is best displayed in the submucous variety, for as it grows it pushes the body of the uterus, which is perched on its upper pole, high into the abdomen and in the case of very large tumours the fundus of the uterus can be detected as high as the navel. The topography and shape of this kind of tumour are best displayed when the parts are sectioned in a sagittal direction. The ovoid shape of cervix fibroids is determined by the osseous boundaries of the true pelvis. In a normal female pelvis the pelvic diameters at the level of the middle of the cervix measure, with the soft parts in position, about ten centimetres (four inches); thus the lower segment of a large cervix fibroid is a solid cast of the true pelvis. In one of my specimens the minor (transverse) axis of the tumour measured 12·5 centimetres, this excessive measurement being due to the slow but steady expanding effects of the tumour on the bony walls of the pelvis. It is

well to bear in mind that the oval condition of the vaginal pole of a large cervix fibroid corresponds with the shape of the occiput of a recently delivered fœtus at term. The ovoid shape is also attained by subserous cervical fibroids when they grow from the posterior aspect of the cervix as shown in Fig. 2. This kind of tumour as it increases in size pushes the body of the uterus high out of the pelvis on its upper

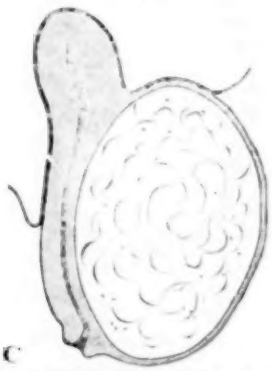
FIG. 2.



A diagram of a fibroid growing from the posterior wall of the cervix, showing its relation to the peritoneum.

pole, but its relation to the cervical canal is worth some attention. The intracervical fibroid, as shown in Fig. 1, uniformly expands the cervix, and in very large specimens its tissues form a thin covering to the tumour; but a fibroid of the posterior aspect of the cervix elongates it without expanding the canal and is really situated between the

FIG. 3.



A diagram of a fibroid growing from the anterior wall of the cervix to show its relation to the peritoneum as it passes from the anterior wall of the uterus to the bladder.

cervix and the peritoneum. This is a topographical distinction of some importance in connexion with the clinical aspect of these tumours.

Fibroids on the anterior aspect of the neck of the uterus remain more or less globular and do not distort the shape of the cervix as a rule; when of large dimensions they push their way upwards between the peritoneum and the anterior abdominal wall; in one example under my care the whole of a large tumour of this kind had become extraperitoneal. It is a noteworthy feature of the cervical fibroid that in more than two-thirds of the cases the tumour is solitary. All varieties of cervix fibroids are furnished with a distinct capsule; the tumour tissue on section presents the characteristic whorled arrangement of the common form of uterine fibroid and is microscopically identical with it. Fibroids of the neck of the uterus when they do not cause menorrhagia are very insidious and rarely give rise to serious symptoms until large enough to fill the pelvis and to exert pressure on the urethra, the vesical segments of the ureters, and the rectum. In some cases, especially variety C (Fig. 3), there is direct pressure on the bladder. The frequency of micturition, dysuria, and retention of urine, which are such frequent concomitants of the varieties A and B, are due to the bladder being dragged upwards by the uterus as this organ is pushed out of the pelvis by the growing tumour.

I am induced to prepare this paper with the hope of reconciling some divergent opinions as to the frequency or otherwise of menorrhagia in connexion with cervical fibroids. With this object in view I analysed the clinical reports of 20 cases under my care in the Chelsea Hospital for Women and the Middlesex Hospital. I have appended brief notes of ten consecutive cases in which two points come out very clearly: (1) menorrhagia and metrorrhagia are only noticed with the intracervical variety and bear no relation to the size of the tumour; and (2) hæmorrhages (menorrhagia and metrorrhagia) only occur with intracervical fibroids when the uterus has made attempts to extrude, or has succeeded in extruding, the tumour wholly or partially into the vagina. The corollary is plain. An extruded or partially extruded fibroid is exceedingly liable to become septic and as surely as this happens menorrhagia and metrorrhagia are unfailing consequences.

CASE 1.—The patient was a single woman, aged 41 years. She had a large intracervical fibroid. There were profuse metrorrhagia and profound anæmia. The os uteri was widely open. Panhysterectomy was performed on Dec. 14th, 1899. (Chelsea Hospital for Women.)

CASE 2.—The patient was a single woman, aged 45 years. She had a very large intracervical fibroid. The os uteri was a mere dimple. Menstruation was normal. She complained of pelvic pressure and retention of urine. Panhysterectomy was performed on May 7th, 1900. (Chelsea Hospital for Women.)

CASE 3.—The patient was a single woman, aged 45 years. She had a large fibroid growing from the posterior aspect of the supravaginal cervix. There were menorrhagia and dysuria. Panhysterectomy was performed on Sept. 9th, 1901. (Chelsea Hospital for Women.)

CASE 4.—The patient was a married woman, aged 52 years, who had had six children. She had a large intracervical fibroid. The os uteri was patulous. There was profuse and prolonged menstruation. Panhysterectomy was performed on Oct. 21st, 1901. (Chelsea Hospital for Women.)

CASE 5.—The patient was an unmarried woman, aged 38 years. She had a large intracervical fibroid pushing the uterus high out of the pelvis. Menstruation was scanty but regular. There was frequent micturition. The os uteri appeared as a dimple at the lower pole of the tumour. Abdominal enucleation and supravaginal hysterectomy were performed on Jan. 27th, 1902. (Middlesex Hospital.)

CASE 6.—The patient was a married woman, aged 36 years. She had had four children. A large fibroid was growing from the anterior aspect of the supravaginal cervix. There had been amenorrhœa for three months. She had frequent micturition. Abdominal enucleation of the tumour was performed on May 12th, 1902. She was delivered of a boy at full term on Jan. 2nd, 1903. (Chelsea Hospital for Women.)

CASE 7.—The patient was a married woman, aged 49 years, who had had two children. She had an intracervical fibroid. There was dysuria. Menstruation was irregular. There was painful pressure on the rectum. Panhysterectomy was performed on March 17th, 1902. (Chelsea Hospital for Women.)

CASE 8.—The patient was a married woman, aged 45 years, who had had six children. There was a very large fibroid growing from the anterior aspect of the cervix and extending upwards beyond the umbilicus. The tumour is described in the notes "as big as a football." Menstruation was irregular but not profuse. Supravaginal hysterectomy was performed on Sept. 10th, 1902. (Middlesex Hospital.)

CASE 9.—The patient was a married woman, aged 43 years. She had had one child and one miscarriage. She had an extruded intracervical fibroid of the size of a turkey's egg. There was profuse metrorrhagia. Vaginal myomectomy

was performed on Nov. 10th, 1902. (Chelsea Hospital for Women.)

CASE 10.—The patient was a married woman, aged 31 years. She was sterile. She had a fibroid of the size of a turkey's egg growing from the anterior wall of the cervix and pressing on the bladder. This filled up the vagina, hindering coitus. Vaginal enucleation was performed on May 18th, 1903. (Chelsea Hospital for Women.)

The largest intracervical fibroid known to me is a specimen (Hunterian) preserved in the Museum of the Royal College of Surgeons of England. It measures 30 centimetres (12 inches) in length by 12·5 centimetres (five inches) in width. Unfortunately it is without history.

A close study of these ten cases brings out some further facts. It will be noticed that in some of them the condition of the mouth of the womb is described in this way: "The os uteri was a mere dimple"; wherever this sentence appears it almost certainly follows that menstruation is described as normal, scanty, or irregular and a closer study of the records shows that the patient is usually a spinster or, if married, sterile. On the other hand, the great majority of the women in whom the intracervical fibroid is a source of menorrhagia have borne children and present a patulous and often widely patulous os uteri. It should also be borne in mind that cervical fibroids of all varieties, though commonly solitary tumours, are occasionally complicated by a submucous fibroid in the body of the uterus and this is, of course, a notorious agent in producing metrorrhagia.

A glance at the brief notes of the ten cases shows that these cervix fibroids do not lend themselves to any routine kind of operation. When of moderate size and associated with a capacious vagina the intracervical kind and those which arise on the anterior aspect of the supravaginal cervix may be easily, expeditiously, and safely enucleated through this channel. Tumours which attain and exceed the bulk of a fœtal head at term almost invariably demand treatment by the abdominal route. I have tried a variety of methods. When the uterus with the tumour in its cervix can be raised out of the pelvis far enough to allow the necessary manipulations then panhysterectomy can be performed easily and quickly. Occasionally the tumour is wide and so fixed in the pelvis that it will be necessary to split the uterus longitudinally and to enucleate the fibroid from its bed; then an ordinary supravaginal hysterectomy can be carried out. The enucleation of a large impacted cervix fibroid requires to be conducted carefully without undue display of force or so much shock is produced that the patient's life will be placed in the gravest peril. However, large cervix fibroids can be safely enucleated even when the uterus is gravid, as Case 6 testifies.

Perhaps the acme of difficulty is that met with when the body of the uterus is occupied by a large fibroid and another, even larger, grows from the posterior aspect of the cervix and tightly blocks the pelvis. In this particular condition the fibroid can be enucleated from the cavity of the uterus; the larger tumour is then shelled out of the pelvis and the uterus is removed as in an ordinary supravaginal hysterectomy. The lower extremity of the capsule forms a pouch and the unexpanded vaginal portion of the cervix lies in its anterior wall; before suturing the stump in order to secure free drainage into the vagina I split the cervix longitudinally with scissors. In one instance in which I divided the uterus longitudinally in order to extract a large, tightly impacted intracervical fibroid, instead of removing the uterus I sutured the two halves and left the organ intact. The patient recovered without even a rise of temperature. In conclusion, there is no form of uterine fibroid likely to test the judgment, resources, and common sense of the surgeon to such a degree as a large cervix fibroid tightly incarcerated in the pelvis. The three diagrams used to illustrate this article were drawn by my colleague Dr. A. E. Giles who has assisted me in the removal of many difficult cervix fibroids.

Brook-street, W.

ERRATUM.—In the paper by Dr. Alexander Marmorek on Treatment with Antituberculous Serum, published in our last issue, the words "in which tubercle bacilli were found" (see THE LANCET, March 26th, p. 859, column 1, line 6) were deleted by the author and printed by us in error.

A CASE OF SLOUGHING OF THE CENTRAL PART OF A UTERINE FIBRO-MYOMA SHORTLY AFTER DELIVERY.[1]

BY JOHN D. MALCOLM, F.R.C.S. EDIN.,
SURGEON TO THE SAMARITAN FREE HOSPITAL.

THE following case is interesting on account of the fact that an acutely formed slough was surrounded by living healthy fibro-myomatous new growth and also because a fibro-myoma touching the mucous membrane and the peritoneum was removed by enucleation without serious hæmorrhage.

The patient's age was 32 years. She married in March, 1902, and miscarried in September of the same year. On Oct. 25th, 1903, she had a still-born child of about seven months' gestation. Her medical attendant was not present but he delivered the placenta an hour later. Much blood was lost for five hours after delivery and many clots were passed during the following four days. On the fifth day the vaginal discharge was very offensive, the patient's temperature was high, and she felt very ill. She gradually got better and the discharge ceased but much pain in the pelvis continued. Her medical man told her that this was caused by a tumour attached to the womb which had been there since her delivery and which would probably get all right. He ceased to attend after about four weeks. The pain increased very much as the patient tried to move about and on Dec. 10th she sent for another practitioner, with whom I saw her seven weeks after delivery, and she was admitted to the Samaritan Free Hospital on the next day. She had then a mass in the pelvis, apparently between four and five inches in diameter, closely attached to the womb, which lay to the right and behind. The swelling was always painful but the slightest manipulation and every movement caused intense suffering. The uterine cavity measured just over two and a half inches in length and there was no vaginal discharge. The temperature was 99·4° F. on admission to hospital but on the next day it was normal and it did not again rise until after the operation. Except for the presence of the mass attached to the uterus and some anæmia the patient seemed to be quite healthy. I thought that possibly there might be an extra-uterine fœtation but a diagnosis of inflamed fibro-myoma seemed to explain the conditions better.

On Dec. 18th, 1903, the fifty-fourth day after delivery, as there was no improvement, the abdomen was opened and a tumour which was obviously a uterine fibroid was exposed. The most prominent part seemed to be covered by little, if anything, but peritoneum and the uterus which was well involuted was attached to the back and right side of the growth. The body of the uterus could be seen and felt standing well out from the growth and they seemed to be slightly mobile on each other. The appearances suggested that the tumour was not very deeply buried in the wall of the uterus and it was therefore decided to attempt to remove the fibroma and to leave the uterus. An incision was made through the capsule and enucleation was effected without much difficulty. Only one vessel bled sufficiently to require a ligature, all other hæmorrhages being controlled by sponge pressure. The tumour was placed, however, much more deeply than I thought, and in removing it the cavity of the uterus was laid freely open. A sound passed through the cervix made this quite certain. Nevertheless, hæmorrhage was unimportant and I therefore closed the wound in the uterine wall. The deeper parts were brought together by a continuous catgut suture, but it was impossible to adjust the mucous surfaces accurately and drainage into the uterine cavity was therefore free. The outer walls of the capsule which had contained the tumour were then inverted, but to do so it was necessary to shorten them considerably. This had the advantage of making their edges much thicker and there was no difficulty in inserting Czerny-Lembert sutures so that no part of the silk entered the cavity from which the tumour was removed. The necessary shortening of these flaps caused very little bleeding. Two small pedunculate fibroids of about the size of marbles were also removed from the back of the uterus and no other tumour was detected. The patient

[1] A paper read before the Obstetrical Society of London on Jan. 3rd, 1904.

made an uninterrupted recovery, there being a considerable vaginal discharge for the first few days.

The tumour appeared to be an ordinary fibroid and showed no sign of degeneration until it was incised. Then it was seen that about half an inch all round had the appearance of an ordinary living fibro-myoma, whilst the central part was a whitish-grey slough. There was no possibility of separating the central from the outer part except by using a knife. There was no odour. After being in spirit a few days the colour had all gone, but it was obvious that the external part had contracted more than the central. The appearance was very similar to that shown when a fibroid in the uterine wall has been incised and kept in spirit, but in such a case it is normal uterine tissue that retracts. Mr. W. Sampson Handley kindly made a section of the growth, including part of the central sloughed tissue and part of the unaltered tissue. The surrounding growth stained well with eosin and hæmatoxylin and showed numerous muscular cells with well-stained nuclei. The sloughed part took on little stain and showed hardly any structure, no nuclei being visible. It was apparently in a state of mucoid degeneration. There was a definite line of demarcation between the well-stained and the slightly-stained parts.

These conditions are unique in my experience. It does not seem that there was an ordinary sloughing due to septic influences absorbed from the uterine cavity. The growth was so close to the mucous membrane that contamination from this source must inevitably have induced a putrid slough of the whole tumour, and the death of the patient would probably have followed, because the growth was as near to the peritoneal as to the mucous surface.

The greater contractility of the outer portion of the growth suggested that the central part was more fibroid and less vascular, but probably the difference was due to a degeneration of the sloughed tissue. Nevertheless, the large number of muscular cells must have subjected the central part of the growth to considerable pressure, and this, together with the diminution of the vascular supply caused by the involution of the uterus, seems to afford the most satisfactory explanation of the sloughing of the central part of the growth. According to this view the slough was aseptic and it is probable that if the patient had been kept absolutely quiet sufficiently long the dead tissues would have been very slowly absorbed.

The advantages of enucleating the tumours and of leaving the uterus in a recently married woman, 32 years of age, are obvious. But it should not be forgotten that the surgical completeness of the operation, whilst it gives the patient the opportunity of becoming a mother, exposes her at the same time to the risks involved in the presence of a long scar in the uterine wall, and this condition must give rise to considerable anxiety if the patient should become pregnant again.

Portman-street, W.

A Mirror
OF
HOSPITAL PRACTICE,
BRITISH AND FOREIGN.

Nulla autem est alia pro certo noscendi via, nisi quamplurimas et morborum et dissectionum historias, tum aliorum tum proprias collectas habere, et inter se comparare.—MORGAGNI *De Sed. et Caus. Morb.*, lib. iv., Proœmium.

UNIVERSITY COLLEGE HOSPITAL.

A CASE OF TETANUS TREATED WITH ANTITETANIC SERUM; RECOVERY.

(Under the care of Dr. J. ROSE BRADFORD.)

FOR the notes of the case we are indebted to Mr. W. F Annand, house physician.

The patient, a well-nourished, healthy-looking woman, aged 70 years, was admitted into University College Hospital on Nov. 25th, 1903, at 2 P.M., said to be suffering from tetanus. The history was that on Nov. 22nd she began to feel cramp-like pains in her right leg, which during the next two days spread to the abdomen and thence up the spine. On the 24th she was said to have had a typical tetanic spasm. Ten cubic centimetres of antitetanic serum were injected beneath the skin of the abdomen and the patient was sent to the hospital. On admission a large healing ulcer was present on the front of the right leg, measuring six inches by three inches. Its base was firmly fixed to the bone. No other breach of the surface was discoverable anywhere. The temperature was 97·8° F., the pulse was 96, and the respirations were 24 to the minute. There were slight rigidity of the jaw muscles, slight difficulty in swallowing, and inability to protrude the tongue beyond the teeth. There were no other signs of importance. At 4.30 P.M. the patient had an attack of violent spasm. There were intense pain in all the muscles, along the spine particularly, and marked opisthotonos, the body being bent like a bow, resting only on the occiput and the heels. The eyebrows were screwed up, the angles of the mouth were drawn, and the jaws were firmly clenched. The thorax was absolutely fixed and respiration was entirely suspended. The spasm lasted for about a minute and then passed off, leaving the patient very cyanosed and for a short time unconscious. This condition passed away in two or three minutes. From 4.30 P.M. on the 25th to 12.30 P.M. on the 26th there were 11 attacks of spasm at fairly regular intervals, the third, fourth, and fifth being very slight. An enema of 30 grains of chloral had been given after the first attack and another was given after the last. At 2 P.M. on the 26th chloroform was administered, the ulcer was excised and the surface left was scrubbed with peroxide of hydrogen. An injection of 100 cubic centimetres of antitetanic serum was made beneath the skin of the abdomen. On coming round from the anæsthetic two very severe spasms occurred at 6 and 6.45 P.M. The pulse showed signs of failure and brandy was given frequently. She slept well during the night. At 3 P.M. on the 27th a further injection of 90 cubic centimetres of serum was made near the site of the former injection, this time without an anæsthetic. At 4 o'clock there was a severe spasm, resembling in all respects those which had occurred before. Until Dec. 1st the history was uneventful, no further attacks occurring. On that date the temperature rose for the first time, reaching at night 99·8°. During the evening the patient complained of considerable irritation over the front of the abdomen, the lower part of the back, the knees, and the wrists. There was present on examination an urticarial erythematous eruption consisting of minute white papules on a ground of vivid pink. There were slight headache and nausea for from eight to ten hours. On the following day the rash was general. On the afternoon of the 4th the temperature began to rise steadily, reaching 101·8° on the night of the 5th. There was considerable pain in the wrist-joints, the metacarpo-phalangeal joints of the thumbs, and the interphalangeal joints. They were all swollen and excessively tender, the skin over them being red and glossy. On the 5th there was slight laryngitis, with hoarseness and cough. The knee-joints were swollen and fluid was detected in each. By the 7th the rash and the arthritis were lessening and these had gone by the 10th. The temperature continued going up and down until the 14th, the highest rise occurring on the 8th, when the thermometer registered 102·6°. During this time, on the evenings of the 9th and 10th, two syncopal attacks occurred. Another attack occurred on the 14th, when the patient became unconscious, the chest was fixed, and respiration stopped. This lasted a few seconds and then the back arched as in the tetanic spasms at the beginning of the illness. No special measures were taken. From this time onward convalescence progressed uninterruptedly. On the 23rd a Thiersch graft was applied to the ulcer which united perfectly. The patient was discharged well on Jan. 23rd, 1904. Unfortunately the piece of tissue forming the floor of the ulcer which had been excised was lost and no microscopical or other examination was made of it.

Remarks by Mr. ANNAND.—The case seems to me to be interesting as showing the result of the large injections of antitetanic serum now recommended. The patient had in all 200 cubic centimetres of serum subcutaneously; the rash appeared on the seventh day from the time of the first injection of 10 cubic centimetres and on the fifth day from the date of injection of the first large dose of 100 cubic centimetres. The arthritis appeared on the tenth or eighth day, according to whether one reckons from the date of the small or large injection. That the successful issue of the case is due to the use of the serum, which was supplied by the Lister Institute of Preventive Medicine, is, I think, indubitable.

MONTAGU COTTAGE HOSPITAL, MEXBOROUGH.

A CASE OF PYLORIC STENOSIS AND GASTRIC DILATATION OF VERY LONG DURATION (21 YEARS); POSTERIOR GASTRO-ENTEROSTOMY; COMPLETE RECOVERY.

(Under the care of Mr. B. CROSSFIELD STEVENS.)

THE patient was a man, aged 40 years. He was thin, emaciated, and bedridden, and unable to retain food or to digest it. He stated that his illness dated from the age of 18 years, when a horse rolled on him. Pain in the stomach and vomiting came on soon afterwards and three months later he went to the Sheffield Infirmary, where he was put to bed, kept on a milk diet, and had his stomach washed out. He still vomited and had pain a few hours after food. After three months as an in-patient he was made an out-patient and continued to attend for three years and was able to work occasionally. Ten years previously, still suffering from the same symptoms, he went to the Sheffield Royal Hospital and after five weeks' lavage, dieting, and rest was discharged. From that time up to two months previously, when first seen by Mr. Stevens, he had been treated privately. When Mr. Stevens saw him the emaciation was extreme; the man was unable to take anything without pain accompanied by vomiting, proximate or remote, and was going downhill fast. The friends were very adverse to any surgical procedure until they understood that it was operation or a lingering death. Under carbonic acid gas distension the stomach was quite two inches below the umbilicus. The pylorus could not be felt but most of the pain was at the cardiac end. Succussion splash was easily obtained and was very pronounced. The vomit was acid and frothy; it was never tinged with blood.

Owing to the weak condition of the patient he was given 20 minims of liquor strychninæ hypodermically and a saline enema with brandy and the operation was completed within three-quarters of an hour. The pylorus was a hard gristly mass but gave no indications of being malignant nor were there any adhesions to the gall-bladder or any viscus. The stomach having been washed out a few hours before was empty and large. The ordinary method of posterior gastro-enterostomy was done as Mr. Stevens had seen no vomiting usually after this route. The transverse mesocolon was opened, the stomach was pulled through and clamped, and the jejunum was looped up and ligated with rubber tubing. The anastomosis was made over a bone bobbin to act as a temporary splint for the surfaces to join over. Celluloid thread was used for the serous sutures and catgut for the mucous ones.

The patient was rather collapsed on return to bed. Liquor strychninæ and brandy were given every four hours. Hot water and plasmon were given by the mouth. A little pain and distension were present on the second day and this was relieved by the flatus tube. After this the patient never had a bad symptom; the pulse always kept below 100. The temperature was normal. There was never any hiccough or sickness. Six weeks after the operation the patient was well and walking about and was enjoying his food and had gained weight considerably. Great credit is due to the matron and the nurses for their assiduous attention.

Medical Societies.

MEDICAL SOCIETY OF LONDON.

The Treatment of Urinary Tuberculosis.

A MEETING of this society was held on March 28th, Dr. F. DE HAVILLAND HALL, the President, being in the chair.

Mr. E. HURRY FENWICK read a paper on the Treatment of Early Urinary Tuberculosis. He advocated the use of Koch's new tuberculin in cases where the mucous membrane of the bladder was alone affected by the disease. He had used this remedy since its introduction in 1896 and found that in many instances it afforded real relief to the pain in the lower urinary passages. No claim for cure was advanced. It must not be used unless the tubercle bacilli were found in the urine by a competent observer. Its exhibition had to be carefully watched, for it was liable to light up trouble in one or other kidney latently affected by tuberculosis. In a large number of cases of urinary tuberculosis the cystoscope enabled the clinician to decide as to whether the kidney was affected or not, for the chronic form of the disease was almost always unilateral and the kidney was implicated early in the course of the disorder. When the kidney was shown by the cystoscope to have a ureter condensed and choked by peri-ureteritis he advocated its removal. He gave a list of 25 nephrectomies for tuberculosis with one death. Four of the female cases in this list became pregnant subsequently to the nephrectomy, two being delivered of healthy children. This afforded evidence that a single kidney in a tuberculous patient could bear the stress of pregnancy. Mr. Fenwick considered that the heavy death-rate of nephrectomy for tubercle of the kidney, just as that for carcinoma of the kidney, depended upon the surgeon not operating early, and he contended that the cystoscope would enable earlier interference and more judicious after-treatment. Should the cystoscope show a *single* ulcer in the bladder (and that condition was a rare one) he advised that it should be cut away suprapubically instead of using tuberculin. The same lines were employed in the male affected by genito-urinary tuberculosis. The affected testis or testes, vasa and seminal vesicles must be sacrificed if any good was to be effected. Should, however, the deposits be many and widespread, or should the history of tuberculosis of parts other than the genito-urinary tract be obtainable, operation and tuberculin were useless and the best that could be done consisted in hygienic, dietetic, and therapeutic measures.

Dr. A. E. WRIGHT said that he had been engaged on work on somewhat similar lines. The use that had been made with the new tuberculin was not great. The new tuberculin consisted of the protoplasm of the tubercle bacilli and was a "vaccine" against tuberculosis similar to the "vaccine" against plague and, as he had more recently demonstrated, against streptococcic infection. The new tuberculin could be used with success in those cases in which the tubercle was local and he had used it in such cases with a fair measure of success. He had inoculated a considerable number of cases and from the examination of the blood he had been enabled to construct a curve showing the increase of immunity. He had, however, only treated one case of urinary tuberculosis but in that case very marked improvement had taken place. He thought that it was only by an examination of the blood that a true estimate of the effect produced by the inoculation could be obtained. After the first inoculation a negative phase was produced which after two or three days became a positive phase. The positive phase gradually fell away and then it was that a fresh inoculation should take place. Immunity was in this way built up and he had treated several of the severer forms of tuberculosis in this manner with success.

Mr. F. SWINFORD EDWARDS said that tuberculosis of the urinary passages was one of the most distressing affections. He had treated a considerable number of such cases with Koch's new tuberculin and in all of them the symptoms were much relieved and three cases might be said to have been cured. This form of treatment marked a great advance. He had never knowingly tried it in tuberculous disease of the kidney. He thought that it might be of value in diagnosis as it gave rise to pain in the affected kidney. He asked why Mr. Fenwick did not recommend it in single ulcer of the bladder.

Mr. J. G. PARDOE said that he was quite certain that tuberculin injections were not only useless but actually harmful in advanced disease of the kidney. He had used it in six cases with unsatisfactory results. He asked whether it was possible to distinguish between an ascending or a descending tuberculosis of the ureter by the nature of the local affection of the bladder in the neighbourhood of the ureter. He said that a solitary tuberculous ulcer was most frequently situated on the trigone of the bladder and that it would be difficult to remove it from this situation.

Mr. J. W. THOMSON WALKER said that he had treated some eight cases of tubercle of the bladder by inoculation and had had three cases under observation for from three to ten months. In only one of these cases was there no improvement while in all the rest there was very marked improvement. The inoculation also tended to diminish hæmorrhage. In three cases of kidney tubercle and in one of ascending tubercle of the ureter no improvement had taken place. In two cases of early primary tubercle of the kidney

no improvement had taken place in one, whilst marked improvement had occurred in the other. Tuberculin inoculation was not likely to do any good in the late cases of tubercle of the kidney but it was most beneficial in tubercle of the bladder.

The PRESIDENT asked whether a moderate degree of pulmonary tuberculosis negatived the use of this tuberculin. He also asked whether any special diet had been used and whether any drugs such as urotropin had been given at the same time as the injection.

Mr. FENWICK, in reply, said that when the urinary passages were affected with tubercle the lungs were very seldom affected and when there was pulmonary tubercle the urinary passages were seldom affected except in the late stages of the disease. He had not treated single ulcer of the bladder with tuberculin injection because he thought that it was best treated by removal. He was quite unable to distinguish between an ascending and a descending tubercle by the appearance of the bladder in the neighbourhood of the ureter but when he found that the ureter was retracted then he was certain that the kidney was affected.

CLINICAL SOCIETY OF LONDON.

Intestinal Obstruction immediately following Typhoid Fever.—A Case of Severe and Fatal Hæmaturia of Unknown Origin.—A Case of Attempted Division of the Eighth Nerve within the Skull for the Relief of Tinnitus.

A MEETING of this society was held on March 25th, Dr. FREDERICK TAYLOR, the President, being in the chair.

Dr. E. W. GOODALL communicated a paper upon two cases of Intestinal Obstruction immediately following an attack of Typhoid Fever. The first case was that of a boy, 14 years of age, who was admitted to the Eastern Hospital at the end of an attack of typhoid fever, during the latter part of which there had been some abdominal pain. A relapse followed and at the end of this the patient suffered for three days from vomiting, hiccough, and pain in the abdomen. About three weeks later a second relapse took place, which was again followed by an attack of pain, hiccough, and vomiting. During this attack the patient died. At the necropsy the small intestine was found partly to be obstructed about two and a half feet above the valve by a fibrous band stretching from the mesentery to another part of the small intestine. Apparently this band had arisen out of a patch of local peritonitis opposite a deep ulcer. There were many healing ulcers in the small intestines. The second case was that of a young man, 22 years of age, who was operated upon for perforation on the twentieth day of an attack of typhoid fever. At that time there was no generalised peritonitis nor were there any peritoneal bands. The patient did well for about a fortnight when he began to suffer from vomiting. A week later there were other symptoms of partial obstruction and he died somewhat suddenly from a second perforation. At the necropsy a number of small bands were found kinking and compressing various parts of the small intestine. The second perforation was situated about six feet above the valve in an ulcer just above the highest band.—Dr. SEYMOUR TAYLOR inquired if there had been anything in the diet to account for the relapse, as he believed that such an event could frequently be traced to a change of food. As a sequela of enteric fever intestinal obstruction was so rare that most classical treatises were silent upon the subject.—Dr. GOODALL, in reply, said that he did not consider that a relapse in typhoid fever was necessarily associated with a change in the diet. The clinical history and post-mortem appearances of these cases suggested that the bands were formed out of local patches of peritonitis opposite intestinal ulcers.

Mr. WALTER G. SPENCER read notes of a case of Severe and Fatal Hæmaturia of Unknown Origin. The patient was a man, aged 44 years, who had first noticed blood in his urine about a fortnight before his death. His previous health was good. The chief symptom had been an increasing hæmaturia unaccompanied by pain or frequency of micturition. On admission to the Westminster Hospital he was very anæmic, practically pulseless, and dyspnœic. The bladder was distended but was not tense or tender. The temperature was subnormal. He was infused with salt solution, given repeated enemata of water, and stimulated with alcohol and strychnine. He passed urine containing a large proportion of blood and he died within 12 hours of admission. The post-mortem examination failed to throw any light on the cause or source of the hæmorrhage. The urinary tract appeared normal and no gross lesions were observed. The blood vessels were not diseased. Microscopical sections of the kidney, the vesical wall, and the aorta did not show anything abnormal, except that the wall of the latter vessel was perhaps thinner than was usual at this age. A second case of recurrent hæmaturia was also narrated in a man, aged 42 years, in whom the condition was temporarily arrested by suprapubic cystotomy and drainage of the bladder. Cases of hæmaturia unaccompanied by lesions had been referred to by Osler who mentioned Gull's term "renal epistaxis." Klemperer, in discussing this subject, used the term "angio-neurosis." Some of the cases might be compared to those of post-operative hæmatemesis, where no gastric lesions were found.—Dr. W. P. HERRINGHAM remarked that in some cases of fatal hæmaturia varicose veins might be seen in the ureter. He thought that much stress could not be laid upon the size of the aortic coats as these were subject to great variation. A vascular origin of the condition was rather suggested by the age of the patients.—Dr. A. E. RUSSELL pointed out the analogy between certain cases of hæmaturia and those of fatal hæmatemesis and referred to a case of the latter affection in which a minute ulcer was found post mortem at the junction of several large vessels.—Dr. WILFRED HARRIS inquired if the coagulation time of the blood had been tested and also whether calcium chloride had been administered.—Mr. C. H. FAGGE asked if there were any hæmoglobinuria present in either of the cases.—Mr. GEORGE EASTES inquired if the blood clots had been subjected to careful washing in water with a view to determining their origin by their shape when floated out.—Mr. SPENCER replied.

Mr. CUTHBERT S. WALLACE and Mr. H. J. MARRIAGE described a case in which an attempt had been made to divide the Eighth Nerve within the Skull for the Relief of Tinnitus. The patient was a female, aged 23 years, who developed left otitis media in 1898. Several operations followed and four years afterwards she began to suffer from tinnitus and vertigo, which symptoms increased in intensity to such an extent that her life was rendered thereby well-nigh intolerable. It was therefore decided to attempt to divide the eighth nerve. Numerous experiments were made on the cadaver with the result that a modification of the operation for the exploration of the posterior surface of the petrous bone was finally adopted and this was practised on Sept. 3rd, 1903. The operation was made very difficult on account of the constant discharge of cerebro-spinal fluid and also by the hæmorrhage from the surface of the cerebellum. The eighth nerve was exposed and divided by traction with a blunt hook. Noises were present on the following day. There was no facial paralysis. The wound never showed any reaction and continued to discharge. The patient gradually sank and died on the twenty-first day. At the necropsy it was found that a fine strand of the auditory nerve had escaped division. There was no meningitis and the internal ear presented a normal appearance.—Dr. E. FARQUHAR BUZZARD, who had made a microscopical examination of the nerve after staining by Marchi's method, said that the whole of the vestibular and two-thirds of the cochlear nerves were degenerated as a result of the section. He believed that very little was known with regard to the morbid anatomy of tinnitus, which was not a common symptom in gross organic disease of the brain except where there were lesions affecting the nerve roots at the base. The evidence that it was of central origin was not supported by pathological observation.—Mr. FAGGE referred to two cases in which he had exposed the eighth nerve and he had not found it a matter of great difficulty. He considered that tinnitus was more frequent after mastoid operations than was generally supposed and that it was probably of peripheral origin.—Dr. F. PARKES WEBER mentioned a case recorded by Alt of Vienna in which a leukæmic infiltration of the auditory nerve had been discovered in Ménière's disease, tinnitus being a prominent symptom in that affection.—Mr. WALLACE replied.

EPIDEMIOLOGICAL SOCIETY.—A meeting of this society was held on March 18th, Dr. B. A. Whitelegge, the President, being in the chair.—Dr. H. T. Bulstrode, in the absence of the author, read a paper on the Epidemiology of Enteric Fever and Cholera in Hamburg by Dr. Reincke, medical officer of health of the city and port. The paper was illustrated by maps and diagrams. Hamburg, said

the writer, with the adjacent but independent municipalities of Altona and Wandsbek, had a population of more than a million and extended for many miles along the right bank of the Elbe. It was originally built on the "geest," a deposit of the drift which skirted the whole coast from Schleswig to Holland, rising to a height of from 100 to 150 feet as a plateau above the "marsh" or low-lying alluvial beds between it and the sea or estuary, formed by the mud brought down by the rivers. With the exigencies of increasing commerce building had been extended over the marsh and on the "polders" or islands in the estuary, having been rendered possible by driving piles and the construction of dykes and embankments. A larger dyke, the Wetterung, ran parallel with the river, with houses on one side and market gardens and dairy farms on the other. Enteric fever was endemic in the villages of the marsh and probably many cases were caused in the towns by vegetables and milk infected by water from the Wetterung, that of the wells on the "geest" being charged with too much iron for domestic use. Prior to 1830 there was neither sewerage nor public water-supply in Hamburg, but the former was introduced in 1831 and the latter in 1842. The water of the river, however, was still used, as well as polluted, by the enormous floating population of barges, tugs, &c., and above all of the large river craft from the canals connecting the Vistula and Oder with the Elbe, 800 of which were often in the port at a time. The population of Hamburg, which in 1842 was only 160,000, was now 740,000, that of Altona 168,000, and of Wandsbeck 30,000. Each had its own waterworks, Hamburg taking its water from some miles above the town, Altona from below, though it was carefully filtered, but Wandsbek from upland lakes in Holstein. The course of epidemics of enteric fever in Hamburg and Altona was characteristic of the differences in their water-supplies, that of Altona being very much more exposed to pollution at its intake, but, save on some exceptional occasions, far more effectually filtered. Enteric fever in Hamburg showed a gradual curve extending over six months at least, whereas epidemics when they did occur in Altona through some breakdown in the filtering processes exhibited the features of an explosion, rising and declining rapidly within a much shorter period. The lighter incidence in Altona in ordinary years might be partly due to the lesser density of the population, but the sharpness of the line of demarcation was suggestive of its connexion with the distribution of the water-supplies. These accidents were more frequent formerly when the management of the filter-beds during continued hard frosts was less understood than it was now, and since 1893 no serious epidemic had occurred in either town. The number of cases had not of late exceeded 3 or 4 per 1000 population—i.e., from 200 to 300 per annum with about 30 deaths. Some were introduced by foreign shipping and many more by the barges engaged in inland navigation; but whether the residuum had any connexion with the water-supply would be certainly known only when the whole should be derived from deep wells as it would be before many years, though several towns with such supplies had as much enteric fever as Hamburg. The relation between the enteric fever and the movements of the ground water was obscure, as was the cause of the great rise of the curves in 1857, 1865, and 1889, and, in fact, when the level of the ground water was lowest. The same relation was observed at Munich, though there experience showed the absence of any connexion between the fever and the water-supply as clearly as the contrary was at Hamburg, and it was certain that since the improvement in water-supply and sewage disposal at Hamburg the fluctuations of the ground water had exerted no influence. Epidemics of cholera had been spread in like manner; introduced from Russia by the river craft it had followed the course of the inland water-ways except on the last occasion in 1892 when it came by sea from Paris and Havre. Then the influence of the water was conspicuously marked, the cases in Hamburg being 26·42 and the deaths 13·44 per 1000, those in Altona 3·81 and 2·13, and in Wandsbek 3·06 and 2·09, many of those in Altona and Wandsbek having been infected in Hamburg. This epidemic was explosive, attacking the whole city whether on marsh or "geest" simultaneously. Enteric fever had always broken out in epidemic form at the same time as cholera, beginning so much later only as its incubation period exceeded that of cholera, and this was but natural considering how dependent they both were on like conditions of soil and water. A form of choleraic diarrhœa had prevailed at the same time among infants but there had been a decrease of 1000 or 2000 deaths from this cause annually since the great improvement in the sanitary conditions of the town.—Mr. Shirley F. Murphy observed that the paper showed the large part played by water in the spread of the fever which we were apt to under-rate, and though in our milder climate the dangers of frozen filter-beds were less the experience of Altona proved the risks incidental to the use of sewage-polluted water, however carefully filtered. The reduction in the mortality from infantile diarrhœa following improved water service was remarkable, for we did not in this country commonly include water among the causes.—Dr. E. C. Seaton did not think that much enteric fever in this country was due to the use of river water, and though we had had outbreaks, as at Maidstone, owing to pollution of springs there was more typhoid fever in Liverpool and Glasgow with the purest mountain sources than in Hamburg and Altona.—Dr. A. Newsholme compared the cases of Munich and Hamburg, remarking that whatever influence rainfall and ground water might have exerted on the prevalence of enteric fever in former years it ceased to be traceable when the mortality had been reduced by improved sewerage and water-supply. Food and personal infection, especially by unrecognised cases, were more potent. The choleraic diarrhœa of Reincke was quite different from infantile diarrhœa or enteritis and was not unknown here in like association.—Dr. H. Franklin Parsons would on no account extenuate the influence of water, though with more deep wells and better filtration it caused fewer cases than formerly. We had in recent years had water epidemics at Maidstone, Lynn, Gloucester, and other places.—Lieutenant-Colonel R. H. Firth, R.A.M.C., observed that though the close analogy of the relations of cholera and of enteric fever with the water-supply had been amply proved in India we had been able to make no such impression on the latter as we had on the former.—Dr. E. W. Goodall understood that in Holland there was more enteric fever among those who drank from wells than among those who used the water of the canals, which Dr. E. F. Willoughby suggested might be due to the absence of sewers and the pollution of the shallow wells.—Dr. C. Childs remarked that the paper brought out clearly the influence of water in the spread of cholera and the value of efficient filtration. Altona with much fouler water enjoyed comparative immunity, thanks to its excellent filtration, which emphasised the terrible effects of a breakdown in the filters. The ground water of Hamburg was dependent on the rainfall and that at Munich on the depth and volume of the river. Pettenkofer began by holding the English view of water-supplies but found that no improvement in this direction had any influence on the prevalence or incidence of the disease, that being often heaviest where the water was the purest, and he deduced his theory from accurate and exhaustive observations.—Colonel J. Lane Notter, R.A.M.C., maintained that in South Africa water played a very small part, the main factors being flies, dust, soiled blankets, and personal infection among young men, dirty, overcrowded, and ill-fed.—After some remarks by Dr. Reginald A. Farrar the President summarised the salient points of the paper.

NORTH OF ENGLAND OBSTETRICAL AND GYNÆCOLOGICAL SOCIETY.—A meeting of this society was held at Liverpool on March 25th, Dr. W. J. Sinclair (Manchester), the President, being in the chair.—Dr. D. Lloyd Roberts (Manchester) related a case of Epithelioma of the Clitoris. The disease began in the glans and not, as is usual, in the prepuce which in this instance could be freely separated from the glans. Stress was laid on the early and persistent occurrence of intolerable itching and smarting in these cases and on the late appearance of pain. Dr. Lloyd Roberts had only seen three cases of the disease and the age of the patients was always over 50 years.—Dr. H. Briggs (Liverpool) remarked on the rarity of the condition as compared with the frequency of cancer of the penis.—The President said that despite its infrequency the condition was usually seen in an early stage but its treatment was unsatisfactory as speedy recurrence usually took place.—Dr. Nathan Raw (Liverpool) read notes of three cases of Ruptured Tubal Pregnancy which had come under his care in hospital recently. In two of the cases the onset was sudden and alarming, the patient becoming rapidly collapsed and semi-conscious, with all the symptoms of serious internal hæmorrhage. In the third case the onset was mild in its symptoms and the hæmorrhage was limited and not

progressive, but in the course of ten days bleeding recurred with most alarming symptoms of collapse. In all three cases the abdomen was opened and found to be full of fluid and clotted blood. The ruptured tubes were ligatured and removed, recovery following in two cases; the third patient died two days after from shock. Dr. Raw strongly advocated early operation in all cases where the hæmorrhage was serious and progressive, although in a few cases it was desirable to wait a few hours until the patient had rallied from the state of collapse.—Dr. Briggs could not realise the meaning of the expression "an abdomen full of blood." He had never seen it and felt that hurried operations were a mistake. He had never operated upon a patient who was in a state of collapse, although it was easy to be persuaded that the patient was dying.—Dr. W. Blair Bell (Liverpool) thought that collapse should be treated by transfusion which was a somewhat neglected method of treatment. Probably the transfusion of four or five pints, together with some adrenalin, would allow of operation being performed in an hour's time.—Dr. Lloyd Roberts held that operation should be carried out as soon as possible after rupture had occurred. When there were signs of severe loss of blood it was impossible to tell whether the bleeding was persisting or not, therefore it was safer to open the abdomen.—Mr. R. Favell (Sheffield) suggested that implantation of the ovum in the isthmus of the tube might account for the severe bleeding in Dr. Raw's case.—Dr. A. Donald (Manchester) said that his experience of ruptured tubal pregnancy amounted to four cases and he considered that many cases of so-called rupture were instances of tubal abortion or tubal mole formation. If the tube had undoubtedly ruptured operation should be performed at once. It was possible that the bleeding might cease if the patient became profoundly collapsed but as soon as she rallied the hæmorrhage would recommence.—Dr. Arnold W. W. Lea (Manchester) had had four cases in which the tube was actually bleeding when the abdomen was opened. As a preliminary measure in such cases he had found benefit from placing a heavy sandbag over the abdomen to diminish the amount of blood passing along the abdominal aorta until preparations for operation were completed. He thought it ought to be possible to make an exact diagnosis as to the continuance or arrest of bleeding.—Dr. W. Walter (Manchester) took Dr. Donald's view. A bleeding vessel in the tube ought to be treated on ordinary surgical principles. The difficulty was to know whether the hæmorrhage was progressing. A history of previous collapses was in favour of a waiting policy but even in such circumstances the responsibility was very great.—Dr. J. E. Gemmell (Liverpool) thought that the symptoms in tubal abortion were due rather to peritoneal irritation than to loss of blood and considered that these two conditions could be differentiated.—Dr. J. M. C. Given (Liverpool) appealed from the general practitioner's point of view for some guidance on this somewhat bewildering matter.—The President remarked that in these cases the difficulties were not apparent to him. He had repeatedly seen the abdomen full of blood and sometimes actually distended by it.—Dr. T. B. Grimsdale (Liverpool) having spoken, Dr. Raw replied.

LIVERPOOL MEDICAL INSTITUTION.—A pathological meeting of this society was held on March 24th, Dr. James Barr, the President, being in the chair.—Mr. C. G. Lee and Mr. E. M. Stockdale showed three specimens of Endothelioma of the Retina. Mr. Stockdale remarked that these tumours were usually known as gliomata. One section showed tubules made up of a layer of conical cells, supposed to resemble the cones of the retina. This was considered to be an appearance noted in early specimens and the tubules were regarded as capillaries with modified walls. Other specimens showed blood-vessels surrounded by a sheath of new growth. In structure, therefore, these tumours resembled what was known under the name of plexiform angio-sarcoma, plexiform sarcoma, and cylindroma. Another specimen showed spaces filled with colloid material surrounded by cells.—Mr. D. Douglas-Crawford exhibited: (1) Section of Urachus; (2) an Excised Osteo-arthritic Knee-joint removed for Excessive Hydrops Articuli; and (3) the Lateral Lobes of a Hypertrophied Prostate removed from a patient, aged 72 years.—Dr. K. A. Grossmann demonstrated a case of Removal of an Orbital Tumour of fibromatous nature and of slow growth. After two partial removals evisceration was finally necessary. There was no recurrence in four and a half years.—Mr. G. P. Newbolt showed: 1. A Large Multiple Villous Papilloma removed by suprapubic operation from a patient aged 55 years. Although the growth was very large symptoms had only existed for a year. 2. A Sacculated Bladder, the two parts being connected by an aperture only large enough to admit a probe. The patient was admitted with stricture of the urethra and pneumonia.—Concretions in the Appendix were shown by Mr. F. T. Paul and also by Mr. W. Thelwall Thomas. Mr. Paul was convinced that the immediate cause of appendicitis was almost invariably a mechanical irritant. Mr. Thomas gave some statistics collected by him which showed that concretions were not very commonly found. He mentioned that the duration of illness in his case was only 36 hours and that it was the first attack and would undoubtedly have ended fatally but for operative interference.—Dr. Kelly exhibited an excellent section of Psammoma and Dr. J. W. W. Stephens showed slides of the Leishman-Donovan parasite.—Mr. Keith W. Monsarrat exhibited the Gut from a case of Strangulated Hernia and Dr. A. S. F. Grünbaum showed specimens of New Growth from animals.—Dr. R. J. M. Buchanan read a note on a fatal case of Carbon Monoxide Poisoning from Coal Gas to which carburetted water gas had been added. The chemical and spectroscopic examination showed the characteristic features of CO hæmoglobin. The stomach was also shown and though six weeks had elapsed since death it retained the peculiar cherry red colour and showed no signs of putrefaction. The blood from another fatal case which occurred six years ago was also shown and had retained its peculiar colour and gave the characteristic reactions. Dr. Buchanan considered that gas companies manufacturing water gas should be required to notify the consumer when this was supplied.—Dr. Grünbaum gave a Spectroscopic Demonstration to show that the addition of potassium ferri-cyanide to blood saturated with coal gas altered the absorption bands to one broad indefinite band in the green. This change did not occur with blood saturated with pure carbon monoxide. The essential constituent of coal gas which formed this combination had not yet been determined.—Dr. W. Gordon Little gave a short account of the Purin Bodies and their Metabolism; he demonstrated Walker Hall's purinometer and stated that he found ammonium fluoride to be a better precipitant of uric acid than ammonium chloride, as used in Hopkins's method. He was engaged in observations with the object of finding a quick and trustworthy method of clinically estimating uric acid.

HUNTERIAN SOCIETY.—A meeting of this society was held on March 23rd, Dr. F. J. Smith, the President, being in the chair.—Dr. Paul C. Franze read a paper on the Physiological Action of the Nauheim Springs and the indications for their use chiefly in circulatory disorders. Dr. Franze explained that there were three springs containing chlorides of sodium, lithium, and calcium and carbonic acid gas in various proportions and having temperatures of 85°, 90°, and 95° F. The quantity of carbonic acid was further artificially regulated so as to produce (*a*) thermal baths, (*b*) thermal sprudel baths, and (*c*) effervescing or sprudel baths. The physiological actions of these baths were as follows:—1. An increased metabolism when they were employed colder than body heat. 2. A contraction of the vessels of the skin followed by reaction and dilatation—the well-known glow of the cold water bather—were produced in the Nauheim baths at temperatures only a degree or two below body temperature and with so little violence as to be suitable to cases of debilitated heart. This effect Dr. Franze chiefly attributed to the bubbles of gas stimulating the cutaneous nerves but he thought that in part it might be due to the local action of the salts on the capillaries of the skin. 3. This improved circulation led to a more active metabolism and this to a better and more active digestion and nutrition, whilst the tone of the nervous system was simultaneously improved. Dr. Franze claimed that low blood pressures were raised by the bath and that high blood pressures were lowered by it. The baths also relieved a heart which was too heavily loaded by peripheral spasm and filled an empty heart from the peripheral vessels. In fact, these baths afforded a means of administering the most delicately graduated exercises to the heart and circulation and therefore the cases suitable for the Nauheim baths were any cardiac cases which were not of so severe a degree that baths of any sort would be dangerous. If the patients could bear the journey safely they

could bear the treatment. Valvular lesions, simple muscular weakness due to influenza, enteric fever or acute rheumatism, fatty hearts, and even arterio sclerosis with angina pectoris were greatly improved by a graduated course of baths.—Dr. Arthur T. Davies thanked the lecturer and said that he thought too much had been made at Nauheim of the reduction in size of the heart by a bath or two. The heart varied in size from minute to minute.—Dr. Alexander Morison was of opinion that cases of angina pectoris were unsuited for bath treatment.—Dr. T. Glover Lyon thought the benefit of Nauheim arose from its atmospheric depression which discouraged undue exercise.—Dr. E. H. Colbeck said he attributed the benefit of the baths rather to the mechanical action of the water, heat and bubbles than to any chemical action, either direct or indirect, of the chlorides.—Dr. L. A Smith, Dr. Bryant, Mr. H. L. Barnard, and the President also spoke.—Dr. Frazze then replied.—A hearty vote of thanks was accorded to the lecturer.

GLASGOW NORTHERN MEDICAL SOCIETY.—A meeting of this society was held on March 22nd, Mr. C. F. Spinks being in the chair.—Dr. James Erskine read a paper on the Hospital History of Glasgow. The ancient hospitals, he said, were ecclesiastical. These old hospitals were placed outside cities, not for isolation, but for the reception of wayfarers. The oldest hospital related to Glasgow was one at Polmadie, called the Hospital of St. John, and was referred to in the year 1316, when Robert Bruce granted it a charter giving it all the privileges which it enjoyed in the time of Alexander III. Later it became a prebend to the Cathedral. St. Nicholas Hospital was founded in 1460 by Bishop Muirhead, probably to take the place of the Polmadie Hospital. The Barony Church now occupied the greater part of the ground of the old St. Nicholas Hospital which at that time housed 12 old men and a priest. Other hospitals were the Back Almons Hous, which accommodated four poor men, and those of the merchants and craftsmen. The Crafts Hospital adjoined the Hospital of St. Nicholas and lodged at first five, and later 13, freemen. Blackader's Hospital, near the Stable Green, was founded about 1524. It was situated where Dobbie's Loan joined Castle-street. It was for the reception of wayfarers and was described as "a house of the poor and indigent casually coming thereto." A hospital also existed at Strathbungo in pre-Reformation times. With regard to hospitals for the sick, a leper hospital was founded in 1350 on the south side of the Clyde, near the Stockwell bridge, but probably not, as was commonly stated, by Lady Lochow. This hospital disappeared about 1760. In the year 1645 wooden huts were erected in Sighthill to accommodate plague patients, the disease being then so prevalent that the University had to remove to Paisley for a time. The town's hospital was erected in 1733 by public subscription and was situated on the Old Green, near the Clyde. The Royal Infirmary was built in 1794 and John Burns was the first resident surgeon and apothecary. It was enlarged in 1816; the fever house was added in 1829 and the surgical house in 1861. The directors of the town's hospital were urged to provide separate accommodation for the insane and as a result the lunatic asylum in Parliamentary-road was begun in 1810 and finished in 1814. In 1842 it was found to be too small and Gartnavel Asylum was erected. Woodilee Asylum was erected in 1875 and Gartloch and Hawkhead Asylums in 1897. The asylum in Parliamentary road began to be utilised as the town's hospital in 1843. The first municipal fever hospital was the one in Kennedy-street which was erected in 1865. The fever hospital at Belvidere was erected in 1870 and that at Ruchill in 1899. The Glasgow hospitals, including the convalescent homes, now provided no less than 8000 beds for the population of 1,000,000 inhabitants.

BRADFORD MEDICO-CHIRURGICAL SOCIETY.—A meeting of this society was held on March 15th, Dr. C. F. M. Althorp, the Vice President, being in the chair.—Dr. T. W. Hime made remarks on the use of Humanised and Sterilised Milk in the Feeding of Infants. He strongly condemned the growing custom by which women in comfortable circumstances refrained from suckling their children and substituted artificial feeding. Although the chemical composition of human milk might be more or less closely imitated by diminishing the proportions of casein in cow's milk and adding cream, yet it was probable that the resulting product differed widely from mother's milk in its vital constitution. Allusion was made particularly to the antiseptic action of the serum albumin of human milk on the bacillus coli and it was said that this was lost when humanised milk was used. In regard to the sterilisation of milk by heat Dr. Hime pointed out that in most cases many hours elapsed before the milk came into the hands of the consumer and that notable bacteriological and chemical changes might often take place in this time, so that even though the milk were sterilised yet toxins had been formed which could not be got rid of.—Dr. Hime also showed Necard's Harpoon, designed to remove a fragment of the deep part of a tumour for examination.—Dr. W. A. Evans, Mr. Robert Mercer, and Dr. A. C. F. Rabagliati took part in the subsequent discussion.—Dr. F. W. Eurich read notes on the Treatment of Gonorrhœa in the Male. He said at the outset that he relied exclusively on the demonstration of the gonococcus as the criterion of the presence of gonorrhœa. He advocated the use of injections of protargol and depended but little on internal remedies. In cases which had become chronic he employed irrigation with protargol under a pressure of about 40 inches of water and said that it was important that the patient should make an effort to micturate while the irrigation was going on, in order that the whole urethra might be exposed to the influence of the antiseptic.

Reviews and Notices of Books.

Aperçu Historique sur l'Hygiène en Belgique depuis 1830 (History of Hygiene in Belgium since 1830). By Professor and Dr. HYAC KUBORN, President of the Royal Society of Public Medicine and of Medical Topography of Belgium. Second edition, revised and enlarged. Brussels: H. Lamertin. 1904. Pp. 339.

THIS volume is dedicated to the Eleventh International Congress of Hygiene and Demography which was held in Brussels last year and also to the fiftieth anniversary of the First International Congress of Hygiene which met at Brussels in 1852. At the first mentioned of these congresses Professor Kuborn presided over the fourth section, which dealt with the questions of industrial hygiene and therefore it is but natural to turn to the chapter in his work which is devoted to this phase of public hygiene. The result, however, is not encouraging. It is but a short chapter recording discussions and the pious wishes that have from time to time been expressed rather than a record of effective laws adopted and enforced. This was to be expected, for it is well known that Belgium is much behind the age with regard to industrial protective sanitary legislation. Nevertheless, Professor Kuborn is able to describe the still more deplorable state of affairs that prevailed some 50 years ago when, for instance, the only restriction to working in coal mines was that the children should be at least ten years old. Then in the unventilated cotton mills of Ghent the mothers and fathers so suffered that their children under ten years old were on an average from seven to nine kilogrammes lighter than the children of agricultural labourers. There were at that time more than 40 000 women who had commenced to work as lacemakers when only seven years old. Anæmia, leucorrhœa, deformities, and injured sight were the general results. In the spinning and other mills children worked from five in the morning to eight at night with three intervals for meals. Of course, their education was as neglected as their health. There were hardly any institutions to relieve the misery thus engendered but in time benefit societies and various forms of insurances were organised. At last a Parliamentary inquiry was ordered and this investigation was prolonged for no less than five years from 1843 to 1848. Perhaps it might have lasted a little longer but for the revolutionary upheaval that shook all Europe at the latter date. Then, indeed, a Bill was actually presented by the Government but after a year's discussion, when the danger of revolution was not so evident, it was rejected by the Chambers. The medical profession loudly protested that the health of the nation was

seriously compromised. In 1852 the First International Congress of Hygiene met in Brussels and in 1856 a Congress on Poor Relief and Charities further supported the demand for legislative interference with the work of women and children in coal mines, factories, and mills. Some of the mine owners themselves petitioned for a law rendering it illegal to employ boys in mines under the age of 15 years. Governors of provinces protested that the militia in mining districts were so stunted in growth that they could not be relied upon for military service. The Academy of Medicine especially investigated the diseases caused by overwork in coal mines during the years 1858 and 1860 and concluded in favour of forbidding both girls and women from working in the coalpits. In 1863 the proprietors of the Ghent cotton, flax, and silk mills themselves petitioned for a law regulating the hours of labour and some time previously the Chambers of Commerce had recanted their former opinion that protective laws would ruin the trade. They were now in favour of some sort of legislation. A new Bill was presented in 1859, another in 1863, and some Royal decrees were issued dividing industries into two categories, describing the dangers arising in each and conferring on the local authorities some powers to intervene and to impose regulations that might lessen these dangers. Then nothing further was done till 1884. As Professor Kuborn remarks, the legislature went to sleep for 20 years. In the interval countless thousands of workers were brought prematurely to the grave. In 1884, however, a public health service was organised—"Service de Santé, d'Hygiène Publique, et de la Voirie Communal." This is a sort of combination of the work which in England is done by the medical officer of health and the borough surveyor. A Royal decree of April, 1884, forbade boys under 12 and girls under 14 years of age to work in mines or factories and a much stricter control was exercised over the sanitary condition and ventilation of mills, factories, &c.; unwholesome industries also were better classified. In 1894, by the decree of Sept. 21st, the service of factory inspectors was enlarged and improved. No children could be employed under 12 years of age and no woman was allowed to descend into a mine unless she was 21 years old. Nevertheless, such remedies and improvements as have been effected are but patchwork efforts and many crying abuses still exist.

The first two chapters of the volume give a very complete and scientific account of the physical character of Belgium: its climate, its geology, its mineral springs, its sea-bathing and other health resorts, and the climate of its forest and mountainous districts, such as the Ardennes, and this is accompanied by a study of the vital statistics of the places described.

The next section of the work deals with the sanitary services: the medical schools, the vaccination services, the bacteriological institutes, the production of serums, the questions of drainage and rivers pollution, &c. Then we find an analysis of such sanitary legislation, the question of workmen's dwellings, of the control of food-supply, and of beers, wines, and spirits. The diseases of animals and the prevention of the contamination of shell-fish are thoroughly investigated. A chapter is devoted to the hygiene of the school and another to military hygiene. Finally, there are two chapters on infectious and contagious diseases and on the relief and treatment, the hospitals and asylums, intended to assuage the suffering of the poor. In regard to the control of prostitution Professor Kuborn regrets that this should be left to the discretion of local authorities and thinks that there should be a general law applicable to the entire country. He says that "the measures adopted by the town of Brussels have had for result a considerable reduction in the prevalence of syphilis in that capital. The great majority of cases that are seen at the clinic of the hospitals or in private practice are either strangers to the town or prostitutes who have managed to escape from the surveillance of the police."

Perhaps, and especially considering how much the question here raised has been the subject of contest and argument in England, we cannot better conclude this notice of Dr. Kuborn's work than by quoting his opinion. The distinguished professor says: "Generous minds in Belgium and in other countries have dreamed the dream that all control could be abolished. They invoke public morality, the dignity and the freedom of woman. The dignity of the woman who has voluntarily trampled under foot all sense of dignity has nothing to do with the question. As for freedom, do we not applaud the preventive measures that are taken against cholera, small-pox, plague, &c., though they certainly interfere with personal freedom? But anyone carrying on any sort of business is liable to police interference so that he should not sell to the public goods that are adulterated or in any way injurious. It would be a far better argument if it could be shown that the tone of public morality was lowered, but public morality is a thousand times more affected and injured when absolute freedom is granted to the trade in debauchery. Whatever has been done, preached, prescribed, debauchery has always existed and will continue throughout all time and in all countries. The course to be followed is very clearly marked out. In the family circle the child must be well armed and warned against the danger to come. As for the State, it must deal with the facts of the case. This is much, but there is a further consideration. Wherever the authorities have not interfered it has been seen that the terrible ravages of syphilis have spread widely. Then there rises, far and away beyond and above all doctrines, the great question of public and social hygiene, the grave injury done to the health of beings who constitute the family and will become the future generation." In the name of the children, if not of the adults, Professor Kuborn demands the strict application of the Contagious Diseases Acts. Dr. A. Devaux, Inspector-General of Public Health, Dr. E. Dupont, Inspector of the Army Health Services, and Professor U. Lahe of the State Veterinary College have assisted in writing this "History of Hygiene in Belgium" and have contributed the chapters relating to their special functions.

Pheasants, their Natural History and Practical Management. By W. B. TEGETMEIER. Fourth edition, enlarged. London: Horace Cox, *The Field* Office. 1904. Pp. 255. Price 7*s.* 6*d.*

A DETAILED account of the natural history, habits, food, and treatment of the various species of pheasants had long been a desideratum; this book was projected with a view to supply the want in a complete and comprehensive form. In the new edition the author has given us the natural history and general practical management, not only of the pheasants strictly adapted for the covert but also of the allied species which are best suited to our aviaries. The progress of exploration is continually bringing to light species of pheasants hitherto unknown. A few years ago the only pheasant breeding wild in England was the common species (Phasianus colchicus). Our coverts now possess the Chinese, the Mongolian, the Japanese, and the Prince of Wales's species, while Reeves's pheasant, well adapted both for sporting and culinary purposes, has been bred in the forests of Scotland. Our aviaries have also recently been enriched by the addition of the Amherst pheasant and others which by their exquisite beauty eclipse even the gorgeous colouration and elegant markings of the comparatively well known gold and silver varieties. Altogether 21 species are now known and to these may be added two species of the closely allied birds which have been placed in the genus Calophasis. These differ from the true pheasants in having

16 tail feathers and the lower back of the males transversely barred.

The fact that all true pheasants inter-breed freely with each other and produce fertile offspring may be accepted as proof that they are only superficially distinct from each other. It is now, indeed, difficult to find pure bred specimens of the Phasianus colchicus in this country on account of the frequent crossings with the Chinese pheasant.

The author first treats of the natural history of the pheasants generally—their food, habits, and nesting. Then follows the consideration of their management in preserves, the details of the different methods of feeding the birds, their protection from their numerous enemies, and the formation of coverts. These chapters are succeeded by an account of their treatment in inclosed pheasantries, the hatching of eggs, the feeding of the young birds, and the prevention and cure of their diseases. A detailed description of the different species adapted for turning out is also given and the work concludes with accounts of the ornamental specimens.

The pheasants constituting the genus Phasianus are readily distinguished by their tail feathers, which are 18 in number. Phasianus colchicus was certainly brought into this country at an early period, for it is mentioned in Dugdale's "Monasticon Anglicanum" that the Abbot of Amesbury obtained a licence to kill pheasants so far back as the year 1100. Although many attempts have been made for its domestication the pheasant still retains its primitive habits. Many amusing stories are related in this volume of the attempts to tame and to domesticate individual specimens. The value of the pheasant to the agriculturist is very considerable, as the birds destroy enormous numbers of insects, to say nothing of their liking for the roots of various weeds, but it would be absurd to deny that grain forms their favourite food. The chapter on the diseases to which pheasants are liable is an interesting one; the occurrence of lead poisoning among the birds which have escaped the battue is a curious sequence.

The book is illustrated from life with six coloured plates, 17 engravings, and many woodcuts. The merit of the illustrations is great. To those members of the profession who indulge in the rearing and shooting of pheasants we commend the volume—they will find all the descriptions bright and admirable and the advice practical.

Transactions of the Epidemiological Society of London. New Series. Vol. XXII. Session 1902-03. London: Williams and Norgate. Price 6s. net.

MEMBERS of the Epidemiological Society are reminded by the honorary secretaries that the publication of these Transactions has been recently transferred from Messrs. Shaw and Sons to the firm named above from whom copies of back volumes and of the index can be procured. The current volume is fully up to the high level always attained by these Transactions and the value of the present number is enhanced from the fact that abstracts of the discussions which follow the reading of each papers are furnished. As we invariably give a very full abstract of the papers communicated to this society we shall content ourselves here with a brief indication of the contents of the present volume. Lieutenant-Colonel A. M. Davies, R.A.M.C., discusses the Meaning of Climatic Diseases; Professor S. Delépine contributes a very valuable paper on the Bearing of Outbreaks of Food Poisoning upon the Etiology of Epidemic Diarrhœa; and Sir Patrick Manson is the author of a paper upon the Danger of the Introduction of Yellow Fever into Asia if the Panama Canal becomes an accomplished fact. Dr. Louis C. Parkes treats of the Prevention of Diphtheria in Children's Hospitals and Dr. J. T. C. Nash of the Seasonal Incidences of Enteric Fever and Diarrhœa. The subject of the Etiology of Leprosy was brought before the society by Mr. Jonathan Hutchinson and Mr. J. Nield Cook, one of the foreign secretaries of the society, contributes a paper on Bovine and Human Tuberculosis in India. Finally, the society in a highly appreciative obituary notice refers to its late President, Dr. W. H. Corfield. This volume contains numerous charts and tables and some valuable maps constructed by Mr. F. V. Theobald of the Natural History Museum, South Kensington, showing the distribution of the genus "stegomyia" (Theobald) in both hemispheres.

The Thompson Yates and Johnston-Laboratories Report. Edited by RUBERT BOYCE and CHARLES SHERRINGTON, with H. E. ANNETT, A. S. GRÜNBAUM, BENJAMIN MOORE, RONALD ROSS, and E. W. HOPE. Vol. V., New Series, Part II. December, 1903. London: Longmans, Green, and Co. Pp. 107. Price 12s. 6d.

THE recently published number of the above reports opens with a well-deserved tribute to the generous founder of the Thompson Yates laboratories, the late Rev. S. A. Thompson Yates. The Liverpool School of Medicine was indeed fortunate in possessing so sympathetic a benefactor. Not only did he found and equip the buildings but he constantly helped to keep them effective and to maintain them. It would be well if natural science could rely on a large number of such benefactors. The death of Professor Nocard is also feelingly alluded to.

The medical reports open with one on Trypanosomiasis. The expedition sent from Liverpool to Senegambia in 1902 studied the parasites of this disease found in men and horses. In the paper before us the laboratory methods are first discussed. The section on human trypanosomiasis then follows. Beginning with an account of its distribution and prevalence, the report passes on to the clinical signs manifested. The peculiar symptoms noted were irregular patches of a congested or cyanosed character on different parts of the body, an œdematous condition most marked on the face below the eye, and in a slighter degree on the lower parts of both legs, acceleration of the respiration and pulse, bad appetite, and an irregularly intermittent temperature. The differential blood count is explicitly given, showing a constant increase in the eosinophiles, mast cells, and mononuclear elements, the proportional increase being greatest in the first and last. The report then passes on to the consideration of equine trypanosomiasis and here it is pointed out that a listless expression and a slight rise of temperature were always present; so constant was the slight rise in temperature that one of over 101° F. came to be regarded with the greatest suspicion as indicative of trypanosomiasis. The morphological characteristics of the human and horse trypanosome found in the Gambia are then portrayed. The measurements of the flagellum, the position of the micronucleus, the staining of the protoplasm, the undulatory membrane, and other points are described. Two forms were found in the horse, a long and a dumpy form. Though no constant morphological differences between the human and the horse parasite—more especially in the case of inoculated animals—could be detected, still the parasites usually seen in the blood of horses examined in the early infected stage presented marked differences in size and appearance from the parasite usually seen in the blood of the infected natives.

Next we come to the transmission experiments with the tsetse fly. Those on rats were always negative. Experiments were also made to determine the truth of the statement that the tsetse fly carries nagana from animal to animal in a merely mechanical way and that probably no biological change in the parasite intervenes. Two varieties of stomyx instead of glossina were used, with the result that no success was ever obtained in mechanical transmission. The

results of inoculation of the Gambian human and equine trypanosomes in animals are detailed, rats and mice being used. From these experiments it would seem at present that the trypanosomes are not of the same species for the following reasons: the more chronic course of the disease produced by the human parasite in all animals; the fact that tame rats infected with the horse parasite certainly die from its effects whilst there is no evidence showing that the inoculation of the human parasite is the only cause of death in these animals; and, lastly, the modes in which the human and horse parasites appear and disappear in the blood of inoculated animals during the course of the disease are not the same. Thus whilst there is a marked periodicity of entrance and exit of the parasite in the peripheral circulation in rats inoculated with the human parasite, this is not marked in the case of the horse parasite. Again, the marked enlargement of the spleen and the presence of hæmorrhagic glands are characteristic features of infection by the horse parasite but are not present in the case of the human parasite. Lastly, the equine parasite in the early stage of the disease can be distinguished morphologically from the human trypanosome found in the native. Mr. Theobald then proceeds to describe a new culicid from Senegal, whilst Professor Ronald Ross contributes an interesting section on a new parasite in man, first found by Major W. B. Leishman, R.A.M.C.

Then follows a note concerning the discovery of the trypanosoma Gambiense. In this it is stated that the claims of Nepveu are incapable of acceptance "without the greatest reservation."

Dr. Glynn and Dr. Matthews in their paper describe the bacteria in public swimming baths. They find that the Liverpool baths compare with others in Lancashire very favourably; that the first-class baths contain fewer bacteria than the second-class; and that the organisms were more numerous in fresh than in salt water. They point out also various injurious effects that bathing in swimming baths may produce, such as nephritis, pneumonia, typhoid fever, diphtheria, and scarlet fever. Other effects are earache and lessening of the vitality of the individual. Liverpool would seem to be especially fortunate in the frequency of the change of water in its swimming baths and in the care and supervision exercised. The report closes with the description of a parasitic disease amongst haddocks. The whole of the report is rendered especially valuable by its well-executed engravings and the many references to the subjects contained in it.

LIBRARY TABLE.

The Municipal Year-book of the United Kingdom for 1904. Edited by ROBERT DONALD. London: Edward Lloyd, Limited. 1904. Pp. 508. Price 3*s.* 6*d.* net.—The preface of this useful work is dated Feb. 19th and we think that it was a pity not to delay its publication until after the results were known of the recent London County Council election held on March 5th, for as matters now stand the list of councillors given at p. 11 is quite inaccurate. Another little point which might be altered in next year's issue is the arrangement of the London boroughs. They are nominally arranged alphabetically but St. Marylebone and St. Pancras are placed between Stoke Newington and Wandsworth. If these names were meant to be indexed under the letter S they should, of course, have come between Poplar and Shoreditch as commencing with "Saint." As a matter of fact, we find on p. 396 these two boroughs indexed at the beginning of the letter S. Besides the ordinary information about the various municipalities there are articles dealing with the Education Act of 1902, the housing of the working classes, and other questions of interest.

New Inventions.

A HÆMOGLOBIN SCALE.

THE absorbent paper test in practical hæmatology, provided that the standards are trustworthy, is both simple and satisfactory in evidencing the state of the blood not only as regards genuine anæmic conditions but also in a number of other pathological circumstances. Dr. T. W. Tallqvist of Helsingfors, Finland, has devised a very convenient and accurate appliance for the purpose which consists of a book of absorbent paper divided into squares by perforations, and at the end of the book there is a scale of blood tints of varying degrees of intensity, the minimum being ten and the maximum 100. The normal condition is between 90 and 100 of the colour scale. In order to carry out the determination a square of the absorbent paper is detached from the book and brought to the drop of blood in such a way that it is absorbed slowly until the paper is saturated through. The scales of tints have a perforation in the centre in the form of a letter D but flattened, that is, it is bullet-shaped. The blood stain is placed underneath this perforation in the colour scale and its intensity is thus easily determined by placing it under the degree which corresponds exactly to the tint. The process should be performed in daylight. It is, of course, very important that the tints of the scale should be exact and constant and to that end Dr. Tallqvist personally supervises the printing of the tints before the scale is sent out for practical application. It is obvious that errors of reproduction might easily result which would detract from the accuracy of the method. As a matter of fact, we have found in a few simple experiments which we have made that the tints correspond remarkably with blood itself. Dr. Tallqvist points out that in addition to the assistance which this method gives in diagnosing anæmia it will by careful observation furnish other valuable information also. Thus when a moist ring round the coloured spot appears it denotes a great diminution in the number of blood corpuscles. The greater the diminution of corpuscles the broader is this moist transparent ring. The presence of the ring is thus in general, he says, an intimation that a graver anæmia exists than might at first be supposed, and it is in agreement with this that the phenomenon as a rule does not appear in chlorosis. Even when chlorosis exists to a considerable degree the diminution of blood corpuscles is not excessive, while in pronounced pernicious anæmia diminution is generally the rule. The absorbent paper test appears also to demonstrate the condition of the blood in leukæmia. In attempting to deposit the drop of blood on the absorbent paper a striking contrast to the way in which normal blood is taken up is shown in the fact that the blood in leukæmia is only reluctantly sucked up by the absorbent paper, so that an appreciable time elapses before the spot has dried sufficiently to allow the test to be made. On close scrutiny it will be seen that the shade does not accord with any of those found in the scale, for which reason an estimate of the intensity of the colour cannot be made. Dr. Tallqvist adds that "the great quantity of leucocytes in the blood must, it is true, be considered to belie the change in a physical condition of the blood which in such cases reveals itself. Only a great augmentation of the amount of white blood corpuscles such as we find in leukæmia is shown in the above named manner on the absorbent paper; possibly the changed condition of leucocytes themselves plays a part therein." This simple test, carefully standardised in the way described, places in the hands of the practitioner a very valuable instrument for diagnosing certain conditions of the blood. The test is very easily applied and the results obtained, when compared with a trustworthy scale, correspond remarkably well with those obtained by more complicated blood-testing apparatus. The scale, with a sufficient number of squares of absorbent paper, occupies no more space than does a thin pocket-book.

THE LANCET.

LONDON: SATURDAY, APRIL 2 1904.

War Office Changes: The Army Medical Service.

THE War Office Reconstruction Committee has now issued the third and final instalment of its report. Lord ESHER, Admiral FISHER, and Sir G. CLARKE have certainly lost no time in bringing their labours to a close and in formulating a complete scheme for army reform and the reorganisation of the War Office. The document is in most respects a masterly one but we are not called upon to write an appreciation of its general merits save in the most general terms. These will be weighed by politicians and by the public as they should be. We are mainly concerned with the position which is designed by the Committee for the Army Medical Service, for here we can claim to speak with knowledge of what is wanted.

The appearance of the third report has been awaited by us, therefore, with no little curiosity in order to ascertain what was to be this position, and now that we know we have to confess that the grave misgivings which we previously expressed instead of being dissipated have been accentuated. For the director-general of the Army Medical Service is to have no place in the new Army Council. The proposed new army system will commend itself to ordinary citizens because it is commonly employed by them in all great and successful industries and businesses. It takes into account our peculiar conditions and requirements, national characteristics, and habits of thought and work, instead of slavishly adopting and following some foreign method like that of the German army corps system, for example, which is suited to the conditions of Germany, but which is not necessarily suited to ours. Now it has to be borne in mind that as regards army medical reform Mr. ARNOLD-FORSTER'S predecessor in office, after very full and deliberate investigation, came to the conclusion that, both as a matter of serious national interest and as the result of recent bitter experience, the medical and sanitary services of the army should occupy a representative official position worthy of their very high and important responsibilities. What was then done by Mr. BRODRICK has now been undone. We wish that we could share in the feeling that if the new proposals of Lord ESHER'S committee are adopted the medical and sanitary needs of the army will be secured; but we fear that the constantly recurring evils and causes of public complaint, instead of being removed, are more likely to become stereotyped by placing the director-general under the adjutant-general—a military member of the Army Council.

The third report is a voluminous and important document containing many excellent diagrammatic tables. Beginning with a covering letter to the Prime Minister and closing with a concluding section, both of which are written in a terse, and trenchant style, this final instalment of the report will be read with all the attention and interest attaching to the previous portions of it. Following a tabular statement—Table B—instituting an interesting comparison of the Admiralty system and the proposed War Office reconstitution we come to Section I. dealing with "the adjutant-general" and containing a reference to the duties assigned to his office as those to *personnel* in all that belongs to the care of the soldier in peace and in war. The work of this branch should, it is recommended, be divided into five main groups, one of the five being named "Medical and Sanitary Matters" and comprising the Army Medical Service. Briefly stated, it may be said that stress is laid on the importance of the sanitary service in peace and in war and the committee proceeds to meet the criticism that a place ought to have been provided for the director-general of the Army Medical Service, who was a member of the defunct War Office Council, by pointing out that the Army Council is not, and cannot be, a representative body as regards all the several departments. Sanitation in war and in peace is, the report states, closely bound up with discipline, and the proper position of the director-general of the Army Medical Service is, therefore, under the adjutant-general whose duties are specially connected with the person of the soldier. "We do not admit," says the report, "that, under this arrangement, the status and the power of the head of the medical services will be lowered. We believe, on the contrary, that his position will be considerably strengthened in peace and in war. The council as a whole is now responsible for the welfare of the soldier. It has full powers over the whole range of military requirements and there should be no danger that sanitary considerations will be neglected. The adjutant-general, as a member of the council, occupies a far stronger position than his predecessors and will be able to represent effectively the medical needs of the *personnel* of the army with which he is specially charged. Moreover, the director-general, if necessary associated with a civil representative of the Army Medical Service Advisory Board, should be summoned to the council whenever his advice and specialist knowledge are required." The committee considers, however, that it is desirable to strengthen the hands of the director-general as regards the control of his expenditure and that some discretionary powers of purchase should be given to meet pressing needs. We may add that the construction of all new barracks and hospitals is proposed to come under the civil member of the Army Council and that the Army Hospitals Committee should advise as regards designs, sites, and sanitation of barracks and hospitals. The Army Sanitary Committee is to be abolished as a permanent committee.

We cannot endorse the view of the committee that under its proposed arrangement "the status and the power of the head of the medical services" will not be lowered. But we take a much broader and more important ground than this—namely, as to what is best for the nation and for the public service. The matter is one of a very exceptional kind. Our contention is that from the nature of the case no adjutant-general, however able, nor anyone without special

knowledge and training can be in a position to represent, much less to initiate, the medical, sanitary, and hospital requirements of the army. He must, so far as these are concerned, depend entirely upon the advice of others. The method of procedure seems indirect and roundabout. With regard to the Committee's injunction that the director-general, associated if necessary with a civil representative of the Advisory Board, should be summoned to the council "whenever his advice and specialist knowledge are required," we may remark that his advice might not "be asked for," be obtained too late, or not be accepted, but he would nevertheless not escape responsibility in case of failure. It becomes a very different matter, however, when the head of a large and important army department has a place officially assigned to him on a council. There can be no doubt about the immense loss of life entailed in war by preventable causes of disease; and if these are to be limited in future, and if our army hospital service arrangements are to be the best practically attainable, authority and power must bear some relation to responsibility and to the importance of the objects in view. We hold, therefore, that medical and hygienic considerations require to be represented independently, directly, and prominently in the councils of the War Office by some duly constituted medical authority; they should not merely reach it through the medium of any military member of the Army Council. We consequently regard the view taken by the committee in this portion of its report as a retrograde step so far as medical and sanitary considerations are concerned.

In other respects it may fairly be claimed for the scheme formulated by Lord ESHER'S committee that it is a self-balanced one, its several parts apparently holding well together and representing a sort of organic unity. But something more is, after all, required than facility of administration. The proposals in the report of the Esher committee and the Government action in regard to them will be sure to be discussed thoroughly in Parliament, and we hope that the points that we have raised, and various other questions relating to the Army Medical Service, about which much uncertainty seems to exist, will then be cleared up to the satisfaction of the medical profession.

Self-Medication.

FEW things are more curious among the histories of the many delusions about single subjects which from time to time have afflicted individuals not otherwise apparently of unsound mind than those which relate to an unreasoning trust in the virtues of drugs and to an overpowering propensity for swallowing them. An eminent physician not long deceased was once giving evidence in a will case and on being asked by counsel what fact he chiefly relied upon as establishing the insanity of the testator replied without a moment's hesitation: "Chiefly upon his unquestioning faith in the value of my prescriptions." It might perfectly well be contended that this evidence failed to establish the point at issue and that faith in the prescriptions of a physician hardly deserved to be stigmatised in so severe a manner. But admitting this, there is still little to be said in favour of the sagacity, even if we admit the sanity in respect of disposing power, of the numerous people who spend money and thought over the business of physicking themselves and who usually, if not indeed always, bring this business to an unfortunate conclusion. We are indebted to a paragraph in the columns of our contemporary the *Daily Mail* for an account of an old lady upon whom an inquest has lately been held at St. Leonards and who is described as having been in the habit of taking every night "nine compound rhubarb pills, several mixtures, four tablespoonfuls of senna, three teaspoonfuls of cascara, and a quantity of magnesia." The description of the drugs and of the dosage cannot be said to be pharmaceutically exact. It would be interesting, however, to know whether the medicines taken were effective for their supposed purpose and whether the lady died from exhaustion from over-purgation, or whether they were really powerless to empty an overloaded large intestine; but this inquiry, after all, is only by the way. The real point of interest in the case is that a lady who as the widow of an officer in the army may be presumed not to have been wholly uneducated and who is described as having "disliked doctors" should yet have been so enamoured of what our ancestors called "doctor's stuff" as to swallow it in such prodigious quantities and with consequences so unfortunate to herself. Is her case to be regarded as exceptional or does she merely furnish an extreme example of a prevalent and growing popular craze? Our fears lean towards the latter conclusion and there are only too many facts from which it may derive support.

The whole tendency of what may be called popular pharmacy during the last few years has been in the direction of introducing to the public a great variety of powerful medicines, put up in convenient forms, and advertised in such a manner as to produce in the unthinking a belief that they may be safely and rightly administered at all times and seasons, without any guidance from medical knowledge and without any reference to the actual state of the recipient, as remedies for the popular name of some real or supposed malady. All this, of course, has been greatly promoted by column after column of advertisement in magazines and lay newspapers; but we are compelled to admit that the medical profession cannot be held free from some amount of blame in the matter or from some responsibility for the way in which drugs have lately been popularised and brought into common use as articles of domestic consumption. Medical men have failed, we think, sufficiently to impress upon the public and upon patients that the aim of reasonable people should be to keep themselves in health rather than to be always straying, as it were, upon the confines of disease and seeking assistance from drugs in order to return to conditions from which they should never have suffered themselves to depart. The various alkaline salts and solutions, for example, the advertisements of which meet us at every turn, and which are offered to the public as specifics, safely to be taken, without anything so superfluous as the advice of medical men, for all the various evils which are decribed by the advertisers as gout or as heartburn, or as the consequences of "uric acid," do unquestionably, in a certain proportion

of cases, afford temporary relief from some discomfort or inconvenience. They do this notwithstanding persistence in the habit or in the indulgence, whatever it may be, the over-eating, the want of exercise, the excessive consumption of alcohol or of tobacco, which is really underlying the whole trouble which the drugs are supposed to cure and which at the very best they only temporarily relieve, while they permit the continuance of conditions leading ultimately to degeneration of tissue and to premature death. This is the moral which it is, we contend, the duty of the profession to draw from the daily events of life. The natural secretions of the human stomach are acid and the acidity is subservient to the digestive functions. It cannot be superseded by artificial alkalinity without serious disturbance of nutrition; and the aim of treatment, in the case of all digestive derangements, should be to cure them by changing the conditions under which they arise, not to palliate them for a time by the neutralisation of acid, which may, indeed, give relief from present trouble, but which leaves unaltered the conditions upon which the trouble really depends. Those who look down the obituary lists of the newspapers will be struck by the fact that large numbers of people, in prosperous circumstances, die as sexagenarians from maladies to which various names are given but which are, as a rule, evidences of degeneration and of premature senility while many who pass this period go on to enter upon an eighth or ninth decade of life. The former class, we have no doubt, comprise those who have lived without restraint of their appetites and who have sought to allay some of the consequences thence arising by self-medication, while the latter class comprise those who have lived reasonably and who, if annoyed by imperfect digestion, have sought relief by ascertaining and by abandoning the errors from which it sprang.

The Attitude of the Legal Profession towards the Medical Profession.

IN a letter published in THE LANCET of Feb. 27th, p. 611, Dr. E. MAGENNIS, writing of the conduct of barristers in Ireland, deplored the disappearance of that courteous treatment of the medical witness which once characterised cross-examination but which at the same time did not prevent the most vigorous investigation of the facts, and he drew attention to the unwarranted impertinence, frequently amounting to positive insult, which appears to arise from the assumption that the medical witness must not only be prejudiced but ready to give perjured evidence on behalf of the party employing him. There are many who agree with Dr. MAGENNIS, and who will add that the discourteous treatment of the medical witness is not altogether confined to the Irish courts, although they may admit that such conduct is comparatively rare in England and that in either country it is not that of advocates of high standing and repute. Others, again, are ready to call attention to the contradictions of medical witnesses and to regret that in some instances these should be of a character to bring discredit to the medical profession. In this case, however, as in the others, the man who deserves blame is the exception rather than the rule; he is not one of those who should be taken as types of an honourable profession. The medical profession is at a disadvantage when we compare it with others which are called upon to supply expert evidence in courts of law, and this in more respects than one. Expert evidence is not evidence of fact, it is evidence of opinion based upon scientific knowledge. Medical men give evidence of fact when they speak in the witness-box as to physical conditions which have come under their actual observation; when they draw inferences from those conditions as to the duration of injuries, as to the amount of incapacity produced, or as to the cause of them so far as these points lie outside the limits of their knowledge, they then become expert witnesses. In the same capacity, for the most part, they testify as to the mental condition of persons of doubtful sanity. These are examples of occasions upon which medical witnesses express opinions which they are qualified to give but which may well differ from those of other equally well-qualified persons who have looked at the same facts from a different point of view or who, holding different opinions upon doubtful topics, have a perfect right to express them. All such witnesses are entitled to be treated by members of the bar with the respect due from one learned profession to another.

In most of the actions heard in courts of law there is a winning and there is a losing side, and sometimes the winner gains so easy a victory that it seems wonderful to onlookers that the loser should have been allowed by his advisers to go into court at all. Nevertheless, he has not seldom let himself be involved in litigation because he was advised by his counsel that he had a "good case." Sometimes a suitor, successful before the judge who first tries his case, may find himself taken to the Court of Appeal upon a point of law, a matter of expert opinion, and again the decision of the Court of Appeal may, upon the advice of counsel, be challenged in the House of Lords. The loser there will have to bear the costs of both the lower courts, and the cause of his liability will be to a great extent the conflict of expert opinion founded upon facts which are hardly in dispute. Barristers and judges if they are sometimes blamed in private for opinions found to be wrong are not publicly cross-examined with regard to them, nor are they at any time accused of having been influenced by corrupt motives. The legal profession enjoying such immunity, and conversant as they are with the honest differences of opinion which may exist upon obscure subjects, should remember that, although witnesses who form and who express opinions upon controversial topics must submit their views to be tested by relevant questions, they should never incur without good reason the suggestion of incompetence or venality. In one respect a peculiar disadvantage of the medical expert witness is shared by the lawyer, and this fact should be a bond of sympathy between them. Both have to form their opinions more or less upon information given to them by men and women who are frequently the persons most interested in the questions raised. The engineer gives his evidence, often contradicted by others, after inspection of the ground or machinery or other inanimate objects in relation to which it is sought. The connoisseur of pictures or the expert in handwriting has before him an inanimate article of the genuineness of which

he has to judge without reference to its history, by the aid only of his knowledge and observation. The chemist by analysis compels the substance submitted to him to reveal the secrets of its composition. The medical man, no doubt, to a large extent can observe for himself but at the same time he is to a considerable degree dependent upon stories of sensations alleged to be present in his patient, which may be invented or grossly exaggerated, and upon untrue statements upon all sorts of material subjects. For example, in accident cases he may be misled as to the manner in which an injury was received, as to its immediate effects, or as to the condition of health of the injured person before the accident occurred. The legal expert, in a similar manner, not only has to give an opinion upon questions of law but often has to base a prediction as to the possible success of his client in litigation upon information as to the evidence to be given which may not be borne out when the witnesses come into court.

The disadvantage, however, which particularly affects the medical profession is that its evidence is the expert testimony which is most often required. We have referred to some of the commoner kinds of expert evidence other than that of medical practitioners, but the engineers, the experts in art, the graphologists, and the chemists, who give evidence during any year, can hardly approach in number the medical witnesses who have to give evidence in cases of all kinds and to submit to cross-examination. Hence it has happened no doubt that the suggestion of readiness to espouse a side has been more often levelled against the medical witness than against others. All evidence of opinion is liable to be contradicted by the holders of opposite views upon the same scientific subject. The differences of human opinion have been proverbial from very early times in the history of the human race. In the law courts they are most commonly observable among medical men, and in the law courts the temptation is always present to the advocate to discredit the evidence against him by all means in his power, even by the imputation of corrupt motives by word or manner. It is not, however, the duty of the advocate to win the cause of his client *per fas atque per nefas*. As Sir ALEXANDER COCKBURN avowed upon a well-known occasion, amidst the cheers of his brother lawyers, the arms which he wields he should use as a warrior, not as an assassin. It rests with the judges, and with the honourable men in their profession in Ireland and elsewhere, to see that none among them gives occasion for such criticism as that of Dr. MAGENNIS to which we have referred.

Annotations.

"Ne quid nimis."

THE STATE REGISTRATION OF NURSES.

IN an annotation which appeared in THE LANCET of May 23rd, 1903, p. 1463, we referred to a paper read at a conjoint conference convened by the Matrons' Council and by the Society for the State Registration of Trained Nurses. This paper dealt with the State registration of nurses as it affects Poor-law infirmaries. In the course of our remarks we said: "Neither has it yet been clearly shown that the public and the authorities of the two great nursing institutions (the hospitals and the infirmaries) have arrived at an agreement upon the desirability of State registration of nurses." We have now before us a manifesto signed by many leaders of the medical profession, by chairmen and other officials of hospitals, and by many matrons both of metropolitan and provincial hospitals. This manifesto says that the objects claimed for registration are benefit to the public who would be able to ascertain from the register the competency of the nurse employed and benefit to the "trained nurses" themselves who are alleged to be placed at a disadvantage by the employment of imperfectly trained persons. The manifesto continues: "We believe that these claims are mistaken and that any system of State registration would be detrimental to the public and harmful to the nurses themselves, for the following reasons." We have not the space at our disposal to give the reasons in detail but the protesters call attention to the fact that registration must be based upon some system of examination and that such examination would in no wise test the personal qualities upon which the main value of a nurse depends, such as good temper, manner, tact, discretion, patience, and unselfish womanliness. Already all important hospitals where nurses are trained give to those who are instructed in their wards and whose work has been well done certificates of service after the usual term of three or four years. Such certificates are sufficient testimony of technical knowledge and experience and would not be improved upon by registration or examination. Such are the main objections which the signatories put forward. The names of the signatories, among whom are Lord Lister, the Hon. Sydney Holland, Miss Eva Lückes, and many others who are leaders in their several spheres, cannot but add weight to the opposition already in evidence to the proposal for State registration.

THE RECENT EPIDEMIC OF SMALL-POX AT HALIFAX.

WE have received a copy of a report presented to the county borough council of Halifax by Dr. J. T. Neech, the medical officer of health, describing the epidemic of small-pox which occurred in that town during the year 1903. The report not only deals with the statistics of the outbreak but Dr. Neech makes some remarks on, and suggestions for, the prevention of epidemics of the disease which are well worthy of note. Two charts are given which are interesting in several ways. They show the number of individuals who were infected by two men in the early days of the epidemic. They also demonstrate the difference in the effect produced in the spread of the disease by early cases on the one hand and by cases further advanced on the other. He is of opinion that the virus of the disease when in the body may be confined to the eruption and may not be present in the blood stream or tissues generally and therefore he considers that it is necessary that there should be some abrasion of the skin over the eruption in order to allow of the escape of the virus. From this it would follow that with each succeeding day of eruption the disease would become more infectious. Dr. Neech adduces evidence in favour of this assumption. He instances cases in which the disease was detected in an early stage and no further cases followed. For instance, a young man developed an ordinary discrete attack of the disease; seven other persons occupied the house in which he lived, none of whom were infected. He describes another case, that of a man staying in a lodging-house. He was suffering from small-pox in the papular stage. He used the same towel as the other lodgers and six men were thus infected. Dr. Neech suggests that friction with the towel destroyed the epidermis over the papules and so the virus of

the disease was deposited on the towel. The man subsequently visited certain public-houses and seven more cases were traced to him. The period of infection then corresponded with the commencement of the falling of the scales from his body. When the man was admitted to the hospital he acknowledged that the rash had been out a month. Careful investigation showed that he had been the means of communicating the disease to 40 people. These facts corroborate the views generally held—namely, that small pox patients are capable of communicating infection to others, perhaps during the stage of incubation, certainly during the initial stage, right through the disease, till not a trace is left on the skin of desiccated pustules or scabs or of the subsequent desquamation. The infection, however, is considered to be much more virulent at certain stages of the disease than at others; it is most virulent during the later periods of the rash, when vesiculation, pustulation, and scabbing have occurred, and least so during the incubation stage. Dr. Neech gives some interesting figures which prove in a most convincing manner the value of vaccination. For instance, the following table is worthy of reproduction:—

	Unvaccinated.			Vaccinated.		
	Cases.	Deaths.	Mortality per cent.	Cases.	Deaths.	Mortality per cent.
Under five years ...	10	4	40·0	—	—	—
Over five years ...	30	1	3·3	101	1	0·99
Totals	40	5	12·5	101	1	0·99

Dr. Neech describes the treatment which was adopted and also offers some observations on the cost of the epidemic. The facts stated in the report, apart from the value of vaccination, go to show the great necessity that exists for early notification and isolation of cases of small-pox; that success in controlling an epidemic depends upon this; and that it is the unrecognised cases, presumably of a mild type, which spread the disease.

STREET AMBULANCES.

IN THE LANCET of March 19th, p. 821, we referred to certain proposals recently put forward by the Metropolitan Street Ambulance Association with regard to a plan for providing London with a street ambulance service. Mr. William Thorburn, who is deputy chairman of the medical board of the Manchester Royal Infirmary, has forwarded to us a cutting from the *Manchester Guardian* of March 23rd containing a scheme proposed by himself for a somewhat similar service for Manchester. London, owing to its unwieldy size and to its being not one town but about 20, labours under peculiar difficulties with regard to any organisation which has to deal with London as a whole. So far as we know there are only two organised bodies of this description, the one being the Church and the other the London County Council, and neither of them at present has undertaken an ambulance service. Mr. Thorburn's suggestion for Manchester is that one or more ambulances should be stationed at the infirmary or other points and that there should be telephonic communication with all police stations or police beats. When an accident happened the nearest police constable would communicate with the ambulance station by means of a telephone attached to an alarm post something like the present fire-alarm posts. The ambulance vehicle should be a horsed or motor carriage which should be always ready to start and which should be accompanied by a medical man of the standing of a house surgeon. The drivers should be members of the police force. Mr. Thorburn's scheme, it will be seen, does not differ much from that outlined by the Metropolitan Street Ambulance Association, which we published on March 19th except in the somewhat important point that it eliminates the fire brigade and substitutes the police. Also Mr. Thorburn's scheme provides for a constant medical service. This, we think, is a point which should be insisted upon for London. It would, of course, mean an increase in the junior staffs of the hospitals and here the money question comes in. There would have to be at least two, and preferably four, house surgeons who should be in readiness by day or night to go with the ambulance, and although the pay or the keep of a house surgeon is not a serious item yet the additional expense would fall hardly on a hospital which is generally not too well off as regards its finances. In Manchester, however, such problems would not be so difficult of solution and we congratulate Mr. Thorburn upon a well-thought-out plan which if carried out will, we imagine, be of great service.

EASTER EGGS.

THE custom of offering a gift of eggs at Easter still survives and it is not difficult to surmise in what sense the egg was taken to be a symbol. Nowadays, the custom unhappily has almost lost its former quaintness and dignity and presents of all kinds are made to assume the form of an egg. Even the real egg itself must be coloured to give to it a festive appearance consistent, as it is thought, with a time of rejoicing and so the symbol is vulgarised by painting the egg with an unnatural colour, such as a blazing red, a practice, moreover, which may be open to objection on hygienic grounds. There is no guarantee that the colouring matter employed is of natural origin and artificial colouring may easily contain poisons. The diversity of colours used for the purpose is such that the choice is almost certain to include some of the aniline derivatives many of which are poisonous, while others, though they themselves may be harmless, may contain adventitious poisons. The craze for an artificial brilliancy of colour brings its reward in the shape of copper peas, dyed milk, annatto-stained butter, sugar coloured with salts of tin, and sweets and jam with brilliant anilines. It is hardly surprising that there are those amongst us who envy the lot of our ancestors who lived and ate when simplicity was the order of the day and before it was conceived that natural and simple products could be "improved."

PURPURA PRODUCED BY THE UPRIGHT POSITION.

THE fact that fatigue and walking influence the development of purpura and may produce a relapse if the patient gets up too soon is recognised. At a meeting of the Société Médicale des Hôpitaux of Paris on Feb. 4th M. C. Achard and M. H. Grenet described under the name of "purpura orthostatique" the following remarkable case in which purpura was produced under the simple influence of standing and even of sitting, and independently of fatigue. A labourer, aged 32 years, with signs of softening at the apices of both lungs and a purpuric eruption on the legs, was admitted to hospital. The eruption was symmetrical and consisted of petechiæ and rounded ecchymoses on both legs. The pyrexia was slight and did not exceed 100·4° F. The patient complained of vague pains in the knees. He was put to bed for ten days and the eruption disappeared, leaving only a few copper-coloured stains. He then got up for three or four hours but did not leave the ward and scarcely walked at all. In the evening the eruption reappeared and he complained of fatigue and pains in the knees. He was kept in bed for

eight days and the spots entirely disappeared. He then got up for two hours and the eruption reappeared in the evening. He went to bed for six days, at the end of which he sat in an armchair for three hours without moving about. In the evening several spots appeared on the lower part of the legs. He was kept in bed for eight days. When he got up he was very fatigued and complained of pains in the legs but the purpura did not recur. M. Achard and M. Grenet thought that the purpura was due to a special "fragility" of the vascular system which led to rupture of the capillaries under the influence of the increased blood pressure of the vertical position. But they also suggested that vaso-motor disturbances, provoked by slight change in the equilibrium of the circulation, played a part. Potain has shown that the extravasation of blood in purpura is always preceded by vaso-dilatation. At the following meeting of the society other speakers related cases of purpura in which a relapse was provoked by the patient getting up. M. Besnier, the dermatologist, long ago observed this fact and enjoined care in allowing patients to get up.

THE VICTORIA HOSPITAL FOR CHILDREN.

THE above-mentioned hospital, which was founded in 1866, has, like nearly every other hospital in London, found it necessary to expand its buildings and to make alterations so as to bring them into accordance with modern ideas upon hospital hygiene. The original hospital began its beneficent work in one of the old Chelsea manor houses, by name Gough House. As time went on an out-patient department and a nursing home were added, but the actual hospital building remained the same, the number of beds having increased from 32 in 1868 to 70 in 1890. In 1893, owing to a report by the medical officer of health of Chelsea, the number of beds was reduced to 42 and the committee then decided to erect new wards on a site which was formerly the garden of Gough House but of which the freehold had been acquired by the hospital. On March 25th and 26th these wards were thrown open to inspection and we can cordially congratulate the committee and its architect upon the result of their labours. The building is now complete and ready for immediate occupation. It contains in the basement a large and up-to-date kitchen, store-rooms, nurses' and servants' dining-rooms, and a passenger lift controlled by electrical power. On the ground floor there are two wards, each containing 16 beds. They are the "Louise Ward," named after the generous patron of the hospital, and the "Alfred and Leopold Ward," which was named by Princess Louise, Duchess of Argyll, in memory of the late Duke of Edinburgh and the late Duke of Albany. On the first floor there are two more similar wards, one named the "Cadogan Ward" after the president of the hospital and the "Farquhar Ward," named in memory of the late Mr. Harvie Farquhar, for many years chairman of the hospital and a most kind and generous supporter. On the second floor there are again two similar wards, one named the "Annie Zunz Ward," to perpetuate the memory of the wife of the munificent founder of the Zunz bequest. On this floor there is an outside staircase leading to an isolation block of three wards, containing four beds in each. Thus it will be seen that the new hospital contains 108 beds in all. Each ward is complete with kitchen, bathroom and lavatory, and in case of an infectious outbreak it can be shut off without affecting the rest of the building. The lavatory contains, in addition to the usual water-closet, a douche for washing out bed-pans and a cupboard with a flue in which vessels containing stools which have to be kept for inspection can be placed. The operating theatre is constructed on the most modern principles and is ventilated by fans which drive air through a water screen and over warm coils, so that it enters the theatre washed, warmed, and moist. An exhaust fan in the ceiling removes the air as used. There is also in the building a complete milk sterilising apparatus and also arrangements for sterilising or disinfecting dressings and mattresses and other bedding. There is in addition a complete x-ray department. Balconies are placed outside every ward and there is also a complete clinical laboratory. As mentioned in THE LANCET of March 26th, p. 885, a sum of £13,000 is still required, which the committee hopes to raise by means of a bazaar to be held in June. We can only wish all success to the committee's effort, for the hospital is certainly a well-built and well-planned institution.

IS EPILEPSY A FUNCTIONAL DISEASE?

IN the *Journal of Nervous and Mental Disease* for March Professor Allen M. Starr of New York draws attention to the importance of having a correct view regarding epilepsy. In medical text-books from the earliest times epilepsy has been classed as a functional disease and this view does not seem to have been questioned seriously. Yet a careful review of facts ascertained recently, says Professor Starr, seems to demonstrate the fallacy of the prevailing opinion and to prove conclusively "that epilepsy is usually, if not always, an organic disease." This conclusion is based upon a careful study of 2000 cases of epilepsy which have been seen personally and of which satisfactory records were kept. In the first place it was found possible to draw a fairly sharp line clinically between Jacksonian epilepsy and so-called idiopathic epilepsy. In Jacksonian epilepsy the attack is always recognised by the patient as one of a similar series and consciousness is not lost, at least in the earlier stages of the attack. Four types of Jacksonian epilepsy are recognised—viz., the so-called "motor" type in which the attack starts with a local spasm; the sensory type which is marked by a hallucination (generally crude) of one of the senses at the onset, followed by a temporary suspension of the power of perception in that sense; an aphasic type in which a sudden interference with the function of speech takes place, either in the power of understanding or in the power of uttering speech; and a psychical type in which dreamy states of the mind or imperative ideas dominate consciousness, arresting the normal flow of thought and often leading to automatic acts the object of which is not clear and of which no conscious memory remains. In all these types, says Professor Starr, we consider the Jacksonian attack a sure indication of local irritation of the brain cortex and a symptom of local organic disease. In many cases of idiopathic epilepsy (38 per cent. of Professor Starr's cases) the attack was preceded by a conscious sensation or aura. This aura was in many cases identical in character with the aura initiating a Jacksonian attack. The only difference between a Jacksonian attack of the "motor" type and an idiopathic attack was the extent of the spasm, which in the former began locally and involved only a portion (seldom the whole) of the body, whereas the latter involved the body in a general convulsion. Occasionally, however, the Jacksonian attack ran into a general convulsion. In the cases of idiopathic epilepsy examined 76 showed numbness in the arm, 27 numbness in the leg, 22 numbness in the face, and four showed numbness in the trunk. "Had these patients had a local spasm and not a general convulsion after the aura, we should at once have suspected a lesion of the sensori-motor area." Visual hallucinations were present in 63 cases, auditory hallucinations in 30 cases, and hallucinations of smell or taste in 14 cases of idiopathic epilepsy. "Had these patients not had a general convulsion following," adds Professor Starr, "we should have suspected a lesion in the occipital, or temporal, or uncinate convolutions respectively." The

admitted fact that Jacksonian epilepsy is due to organic disease and the close resemblance in many cases (about 23 per cent.) between the attacks of Jacksonian epilepsy and idiopathic epilepsy seemed to favour the view that in these cases, at least, idiopathic epilepsy was due to actual organic lesions. Idiopathic epilepsy was often associated with mal-development of the brain, the clinical condition being one of imbecility and idiocy, hemiplegia of infancy, diplegia of infancy (Little's disease), or infantile paralysis of the cerebral type. Of 400 cases of mal-development of the brain analysed in his "Text-book of Organic Diseases," Professor Starr found that 156 patients, or 39 per cent., were subjects of epilepsy. Idiopathic epilepsy was a disease of childhood and youth. Thus of 2000 cases, 622 developed before the age of ten years and 755 between the ages of ten and 20 years; that is, 68 per cent. developed before 20 years of age—namely, during the period of most rapid development of the brain. When epileptics were carefully studied it was usually possible to find evidences of signs of mental and physical degeneracy (stigmata), particularly in those who had been epileptic from infancy or early childhood. The ancestral history of epileptics frequently revealed the prevalence among the parents and near blood relatives of epilepsy itself, alcoholism, tuberculosis, or serious nervous disease. On the contrary, the epilepsies of advanced life, which are happily few in number (only 26 cases developed after the age of 50 years) could almost invariably be traced to endocarditis and atheroma, and the patients were very prone to suffer from attacks of thrombosis or cerebral hæmorrhage. From a consideration of these various lines of argument it seemed to be probable, concludes Professor Starr, that epilepsy was an organic disease. In conclusion, it was pointed out that the gliosis found by Féré and Chaslin in epilepsy, by Alkzeimer and others in epileptic imbecility, and recent studies by Pierce Clark and others concurred to show that a diffuse cerebral gliosis underlay epilepsy.

THE LATE SIR EDWIN ARNOLD.

Sir Edwin Arnold, Oriental scholar, philosopher, poet, and journalist, has, in his seventy-second year, passed to "where the Silence sleeps." His considerable merits as a poet will certainly preserve his name in all records of English literature. It may be that the "Light of Asia" gained a popularity by the novelty of its setting rather than by the originality or subtlety of its thinking, but none the less it was the work of a man of genius. But apart from his merits as a man of letters and an untiring worker in the various fields of literature his memory will be cherished by many members of the medical profession whom he numbered among his personal friends. For Sir Edwin Arnold was an admirer of medicine and always found time to follow, as far as a layman might, the advance of medical science. In 1895 he delivered the introductory address and presented the prizes at the opening of the winter session at St. Thomas's Hospital Medical School. That address bore evidence of the keen interest which he took in medical progress. In it he spoke with praise and conviction of the work which had been done and of the benefits which were likely to accrue from the pathological researches of the day, while the important rôle which proper nursing plays in the treatment of disease was fully recognised. It is an interesting fact that during the Crimean war Sir Edwin Arnold wrote some verses to the founder of modern nursing—Florence Nightingale. These verses were incorporated in the address and then made public, we believe, for the first time.[1] His attitude towards experimental physiology was instructive. While holding strongly to the ethics of the religion of Buddha, with its beautiful tenderness for all living creatures, yet he said in one of his speeches: "If to give my own life under torture would certainly lead to the saving of very many other lives I should hate and scorn myself if I had not the will so to die; and as between men and beasts I suppose it is true that we are 'more than many sparrows.'" Sir Edwin Arnold was a versatile and brilliant *littérateur* and a man of wide knowledge and many sympathies. Such men are ever the friends of medicine. One of Sir Edwin Arnold's sons is a member of the medical profession and is Government medical officer to the sanitary authority and port health officer at Levuka, Fiji.

[1] THE LANCET, Oct. 5th, 1895, p. 829.

THE NORTH-WEST LONDON HOSPITAL.

WRITING in the *Times* of March 29th, Lord Rathmore, chairman of the committee of the North-West London Hospital, refers to the appeal which is being made for financial support to the hospital and states that Mr. George Herring, the treasurer, has most generously offered to add one-third to the amount received in response to the appeal. Mr. Herring is well known as a liberal benefactor of charitable undertakings. The Hospital Sunday Fund Supplement to THE LANCET of June 6th, 1903, p. 1640, shows that in each of the years 1899, 1900, and 1901 he gave £10,000 to the Metropolitan Hospital Sunday Fund and in the year 1902 a still larger amount. From his intimate acquaintance with the financial aspect of hospital work his advocacy of the claims of any particular institution must carry great weight.

ACUTE SUPPURATIVE THYROIDITIS.

ACUTE suppurative thyroiditis is very rare and usually is secondary to some infectious disease. In the *American Journal of the Medical Sciences* for January Dr. Henry Roth has recorded the following case in which it was primary. On Nov. 26th, 1902, a man, aged 40 years, was admitted to hospital. He was suddenly taken ill with a chill and high fever on Nov. 23rd and gradually became worse. On admission his temperature was 103·2° F. and his pulse was 126. He seemed in a state of profound sepsis, being cyanosed and sweating profusely. A diffuse tender swelling extended from the suprasternal notch to the upper border of the cricoid cartilage. The most prominent portion of the swelling was red but there was no fluctuation. Over the shoulders were engorged veins. The patient was breathing badly and could swallow only with difficulty. Acute thyroiditis of unknown origin was diagnosed. Under chloroform a median incision was made from the thyroid cartilage downwards for two and a half inches. When the muscles were separated the thyroid presented as a smooth, dark-blue body with a dull capsule. On incising it on the left side a few drops of pus escaped and areas of necrosis were observed. The wound was drained with iodoform gauze. After the operation the temperature rose to 107°. The patient became worse and died on the following day. At the necropsy the thyroid gland was found to be enlarged and swollen; the right lobe was more enlarged than the left and showed areas of softening. On microscopical examination the connective tissue was found to be infiltrated with leucocytes which obliterated the acini. In places there were areas of necrosis and abscesses. On inoculating agar from the thyroid gland the streptococcus was obtained in pure culture. As the thyroid gland has no duct it is little exposed to infection and is usually invaded from the circulation. According to Mygind, thyroiditis is most common in females in the second and third decades and rarely occurs in previously healthy persons or as the result of injury but usually complicates or follows typhoid fever, rheumatic fever, diphtheria, influenza, malarial fever, erysipelas, puerperal fever, sepsis, orchitis, or prostatitis; it may also occur during or after scarlet fever, pneumonia,

and pyæmia. According to Robertson thyroiditis is most common after rheumatic or typhoid fever. After the latter it is usually suppurative and may be due entirely to Eberth's bacillus. Thyroiditis may terminate in resolution, suppuration, or gangrene. Gangrenous thyroiditis is attended by severe symptoms and usually is due to streptococcic infection. In the case related above the local signs might have been produced by ordinary phlegmonous inflammation but the constitutional symptoms were too severe. The latter were perhaps due to interference with the thyroid secretion. Dyspnœa, dysphagia, and movement of the swelling with the trachea are usually present at some stage of thyroiditis. In suppurative thyroiditis early incision and drainage are imperative. This treatment was of little use in the present case because the patient came under treatment too late, when the constitutional symptoms were severe.

THE RECENT DISMISSAL OF ASSISTANT MEDICAL OFFICERS BY THE METROPOLITAN ASYLUMS BOARD.

OUR readers will recall the recent comments in the medical and lay press upon the arbitrary dismissal of certain assistant medical officers of the Metropolitan Asylums Board. We hear that the Board has now offered compensation to these gentlemen and that the compensation has been accepted. The Board, we think, would not have consented to pay anything to its ill-treated employés had it felt certain of the legality of its own position. A spirit has recently prevailed at the counsels of the Board which is inimical to the medical men who hold its appointments. Evidence of this spirit has been recently forthcoming and justifies our belief that nothing would have been paid to the dismissed assistant medical officers if they, or certain of them, had not made clear their intention of not tamely submitting to injustice. Economy is urged by the Board as its reason for slighting the medical staff. We beg to call attention to the result of this economy as evidenced by the payment of these sums of money in compensation. The feeling in the medical profession is growing strong in regard to the management of the Metropolitan Asylums Board and we hope that the Local Government Board will make it an early duty to inquire into the whole situation, for the policy of running counter to medical opinion may land the Metropolitan Asylums Board in a very inconvenient situation. If those of the managers of that Board who are responsible for the recent attitude of the Board towards its medical department should obtain control over the counsels of the Board the metropolis may be placed in the dangerous position of being left without adequate scientific service in the infectious hospitals. We wish that the Local Government Board would boldly take the initiative in the matter and would instruct its nominees upon the Metropolitan Asylums Board to give proper attention to the rights, the privileges, and the views of the medical staff.

A RETURN OF PERSONS EMPLOYED IN TEXTILE FACTORIES AND LAUNDRIES.

A SUPPLEMENT to the annual report of the chief inspector of factories and workshops for the year 1902 was issued last week. It contains a number of interesting details so far as classification could be made in regard to the textile industries. Applications for the returns were addressed to occupiers in January, 1902, but it is computed that about 100,000 returns were outstanding on the last day prescribed for their receipt. The general summary of persons employed in textile factories and laundries contains 15 tables. As regards textile factories the number of departments, owing to the greater separation of manufacturing processes in the return, far exceeded that of previous years. The number of persons employed, however, showed a further decline and this would have been more marked but for the fuller inclusion of non-textile departments in the textile returns for 1901. The decrease was relatively greatest in Ireland and least in England and Wales. The diminution in each of three groups—children (half-timers under 14 years of age), young persons (full-timers under 18 years of age), and adults—was more than sufficient to explain the total decrease of persons employed. The only class showing an increase is that of female adults. An increase is recorded in the trade groups "wool, worsted, and shoddy," "hosiery," and "lace," the chief decrease being in "flax, hemp, jute, and china grass," "silk," and "cotton." The falling off in half timers since 1889 is shown in Table VII. In regard to laundries the return embraces 1774 factory laundries and 3876 workshop laundries registered in the department. Of the total of 5650 the southern division (which comprises London, Kent, Southampton, and Plymouth) included 3860. The figures are not so large as those shown on the inspectors' registers, the return having revealed the closure of many small laundries. It is stated that the corresponding returns for non-textile factories and workshops are being prepared and will appear in due course.

THE SPOROZOA IN RELATION TO DISEASE IN MAN AND ANIMALS.

IN his fourth lecture[1] delivered at University College, London, on March 21st, Professor E. A. Minchin dealt with a group of the sporozoa known as the hæmosporidia which comprise parasites that live in the blood of vertebrate animals and man. They constitute a class of organisms important from the medical point of view, since some of them are the active causes of malarial and other serious fevers. The hæmosporidia resemble the coccidia in many respects, but the latter are parasitic only on the epithelial cells of the alimentary canal whereas the former live in the red corpuscles of the blood. The hæmosporidia multiply endogenously by the process of schizogony or fission, but under certain conditions their continued life is impossible unless they pass through the body of another host, generally a mosquito. Much of the life-history of the malarial parasite has been known for 20 years, but Schaudinn by his recent researches has revolutionised many of our ideas about the hæmosporidia and sporozoa generally. His investigations of halteridium, a species of hæmosporidia found in the red corpuscles of the owl and other birds, have shown that a flagellate stage exactly like that of the trypanosoma of African sleeping sickness occurs in the hæmosporidia. Following the classification of Wasilewski two classes of hæmosporidia are recognised—viz., the hæmamœbæ, which exhibit an amœboid phase in their life cycle, and the hæmogregarinæ, which are gregariniform and exhibit no amœboid phase. The first class, or hæmamœbæ, include the following forms: the hæmamœba malariæ of quartan ague discovered by Laveran, the hæmamœba vivax of tertian ague, and the plasmodium immaculatum of pernicious malaria (Grassi), all of which are able to affect man; the proteosoma præcox of birds (Danilewsky) which dwells within the red corpuscles, the plasmodium Kochi of apes, and the halteridium of birds, a curved halter-shaped parasite found in the red corpuscles; the piroplasma bigeminis of cattle, which is the cause of Texas fever, and the piroplasma canis and the piroplasma equi which affect dogs and horses respectively. The second class, or hæmogregarinæ, include parasites which occur only in the blood of cold-blooded animals (reptiles and amphibians)—e.g., the drepanidium ranarum discovered

[1] References to the first, second, and third lectures will be found in THE LANCET of March 12th, p. 736, and March 26th, p. 889.

by Lankester, the hæmogregarina stephanopii of the water-tortoise, and karyolysus, a parasite which lives on the red corpuscles of the lizard. The intermediate hosts of these parasites are various. Thus all the three varieties of malarial parasite are conveyed to man by mosquitoes or gnats, a species of culex (gnat) carries proteosoma and halteridium to birds, and ticks carry the piroplasma to oxen. The bites or punctures of these insects conveys the parasite into the wound or puncture in the skin. In the case of Texas fever the young ticks infected by the piroplasma from the ovum of their mother carry the disease to oxen and other animals on which they live. An ox infected with this parasite develops all the symptoms of Texas fever within 45 days, during which period the parasite is multiplying and growing within its blood until a stage of virulence is reached which culminates in the symptoms of this fatal malady. The malarial parasites are dangerous to man, especially at the periods of spore formation in the blood, when they are literally produced in millions and prove destructive to the corpuscles and dangerously toxic to the patient.

PARTIAL RESECTION OF THE ASTRAGALUS FOR CONGENITAL TALIPES VARUS.

MANY operations have been devised for the treatment of congenital varus of the foot and in Lorenz's classification there are as many as 14 groups of operations, most of them with several varieties. They include osteotomies, removal of one or more bones, and the removal of portions of one or more bones, and all these are in addition to the division of tendons and other "soft" structures. Lund seems to have been the first to suggest removal of the astragalus and he has been followed by several others, especially Erskine and Mason, who have devised modifications. Verebely removed with a sharp spoon all the cancellous tissue of the interior of the astragalus, so that the foot could be wrenched into position but the articular surfaces were not interfered with. Lücke and Albert advised removal of the head of the astragalus and Hüter excised a wedge-shaped piece of bone from the outer half of the neck of the astragalus. In the present number of THE LANCET is published a letter from Mr. A. W. Hayles of Pontnewydd, Mon., who relates a case of talipes varus which he treated by excising a wedge-shaped piece of bone from the astragalus, the apex of the wedge being downwards. The result of the operation was very good, as ultimately the boy was enabled to run about. Mr. Hayles's operation seems to be a modification of Hüter's method and certainly deserves a trial in some of the milder forms of this deformity, but we should not expect it to prove successful in any very marked case of talipes varus.

THE medical officer of health of the Cape Colony states that for the week ending March 5th there were 8 cases of plague discovered at Port Elizabeth, all in coloured persons. There were 4 males and 4 females and 7 of them are dead. All the patients contracted the disease in tenements in Rudolph-street. No other cases of plague in human beings were discovered throughout the Colony, but plague-infected rodents were found at Port Elizabeth and East London. Of 315 rats examined in the Cape Town and Harbour Board area none was affected by plague. As regards the Mauritius a telegram from the Acting Governor received at the Colonial Office on March 25th states that for the week ending March 24 h there were no cases of plague. As regards Johannesburg 4 fresh cases were reported on March 29th.

THE third contribution to the report on "The Pollution of Tidal Waters, with Special Reference to Contamination of Shell-fish," by Dr. A. C. Houston, was issued this week. We understand that the bacteriological condition of the London water companies' intakes on the Thames is considered to be unsatisfactory. We propose to deal with this report in a future issue.

AT the next meeting of the Incorporated Society of Medical Officers of Health to be held at 8 P.M. on Friday, April 8th, at No. 9, Adelphi-terrace, Strand, London, W.C., a paper will be read by Dr. J. HOWARD-JONES, medical officer of health of Newport (Mon.), on the Control of Measles Epidemics, to be followed by a discussion.

THE annual dinner of the West London Medico-Chirurgical Society will be held at the Trocadéro Restaurant, Piccadilly, London, W., on Wednesday evening, May 4th, at 7 30. Communications should be addressed to Dr. Charles Buttar, 10, Kensington-gardens-square, W.

THE Lord Mayor, accompanied by the Lady Mayoress, aldermen, and sheriffs, will open the Fifteenth Universal Cookery and Food Exhibition at the Royal Albert Hall on Tuesday, April 26th, at 2 P.M.

IN the Court of Appeal on Tuesday the decision of Mr. Justice Byrne in which he declined to remove from the register the mark "tabloid" was confirmed and the appeal was accordingly dismissed.

THE annual dinner of the Pharmaceutical Society of Great Britain will take place on Tuesday, May 17th, at the Whitehall Rooms of the Hôtel Métropole, London, S.W., at 7 o'clock P.M. precisely.

Dr. H. R. Fuller, physician to the late Duke of Cambridge, has been appointed by the King a Member of the Fourth Class of the Royal Victorian Order.

THE AMENDMENT OF THE WORKMEN'S COMPENSATION ACT.

Mr. Arnold J. Greene of Wigan, who has had considerable experience of the working of the Workmen's Compensation Act, 1897, as medical adviser to the Northern Employers' Mutual Indemnity Company, has sent us a pamphlet containing notes and suggestions as to matters of interest to the medical profession in connexion with the administration of the Act. We understand that Mr. Greene is likely to give evidence with regard to this subject before a committee at the Home Office to consider proposed alterations in the existing conditions and his evidence may have been given before these observations appear, but the matter is one which concerns not only the medical profession but employers of labour and working men and the interested attention of a much larger section of the public may at any time be drawn to it. The original Act, which only applies to certain descriptions of work, has already been extended so as to benefit the agricultural labourer and its future application to all kinds of service, including sea service and even domestic service, must be regarded as by no means impossible. With the general effect of the Act most people are familiar; it provides compensation for the accidental injury or death of workmen based upon the actual loss in wages traceable to the occurrence. It also has brought into existence "medical referees" appointed by the Home Secretary for purposes connected with the Act, which are specified in its schedules and in regulations issued by the Home Office to govern its administration.

Mr. Greene's principal recommendations as affecting the medical profession have as their object the increasing of the usefulness of the medical referee, for reasons and by methods which he specifies. The instituting of medical referees, no doubt, was intended by those responsible for the

Workmen's Compensation Act, 1897, as a means of dealing with the conflict of medical evidence which was likely to arise in cases where the duration and extent of the workman's disability from work as well as the cause of it had to be taken into consideration and to be estimated with exactness, for under that Act there were not to be what the law knows as "general damages," the loss of wages alone was to be considered. The duties assigned to the medical referee, which Mr. Greene thinks might be enlarged, arise out of an option given to the workman who may go before him at an early stage in the case and out of the power possessed by the arbitrator to refer to him for report a case in which conflicting medical evidence has been given.

The first class of case arises in this way. Under Paragraph 3 of the first schedule of the Act a workman who has given notice of an accident shall, if so required by his employer, submit himself to examination by a qualified medical practitioner to be provided and paid by the employer. Under Section 11 he is under a similar obligation when he is in receipt of weekly payments under the Act—that is to say, the employer or the person indemnifying him (i.e., an insurance company) has the right of ascertaining, by employing a medical man for the purpose, whether the workman continues to be incapacitated. On this latter occasion, however, the workman has an alternative. If he prefers not to go before the employer's medical man, or goes and is dissatisfied with the certificate so obtained, he may go before the medical referee whose certificate as to the workman's condition at the time is conclusive evidence with regard to it.

On the occasions described it will be seen that, in the first place, the medical referee does not come upon the scene at all until weekly payments are being made—that is to say, until a fortnight at least has elapsed since the accident; and that, in the second place, the workman has the option of calling in the medical referee but the person liable to pay compensation has not. The medical referee can then give a certificate which will be conclusive as to the workman's condition when it is given, but although it may be known that medical men called in by the workman and employer respectively hold differing views only one party and not the other can prevent further discussion by obtaining such a conclusive certificate. It is to the latter point that Mr. Greene more particularly calls attention and he gives many good reasons why the workman in but few cases exercises the right given to him. These may be summed up by saying that the working man who has one medical opinion in his favour may count, if an arbitration is held, upon being awarded compensation, at all events up to the date of the arbitration. If, therefore, his claim is exaggerated and the symptoms which he professes to exhibit are assumed he has everything to lose and little to gain from a visit to an impartial and experienced observer who may give a conclusive certificate against him. It is with considerable force and justice that Mr. Greene recommends that it should be in the power of the person who compensates to refer doubtful cases to the medical referee as well as in the power of him who is claiming compensation and also that he should be called in as soon as possible. It scarcely seems to require demonstration that a medical man will not be able to determine whether certain alleged physical conditions have existed as the result of an accident many weeks or many months after it has occurred with the same confidence that he would have felt had he been summoned to see the patient directly notice of the accident was given to the employer. An instance of an actual case is given by Mr. Greene in which a workman sustained a simple fracture of the leg in May, had his compensation stopped in October, and in March of the following year sought for renewal of compensation, supported by a certificate of a medical referee to the effect that he was suffering from a compound fracture of the leg and from injuries to the shoulder, both the result of the original accident. In order to defend this claim the employers had to go to arbitration in May, a year after the event, on the point that the injuries were not obtained in their employ, and the county-court judge had consequently to refer the case to the medical referee for the reconsideration of a certificate which according to the Act was final. The result of the proceedings was that the man was found to have had a simple fracture, as already known by his employers, and the alleged injured shoulder was eventually put down to alcoholic neuritis. It can hardly be disputed that in order to enable a medical referee to give a certificate with certainty upon any case he should have seen it at the earliest possible stage and, as Mr. Greene properly points out, he should hear not only the workman's statement but that of his employer in order to form a correct opinion as to the nature of the occurrence. An untrue statement by the workman that he has been insensible for three days after the accident or in bed for six months may now be made before the medical referee without anyone being there to contradict it.

With regard to the part taken by the medical referee where there is an arbitration two rules are to be noted: "Before making any reference—i.e., to the medical referee—the committee, arbitrator, or judge shall be satisfied, after hearing all medical evidence tendered by either side, that such evidence is either conflicting or insufficient on some matter which seems material to a question arising in the arbitration and that it is desirable to obtain a report from a medical referee on such matter." "In any case of special difficulty the judge or appointed arbitrator may require the attendance of the medical referee at any proceedings in the arbitration subsequent to the receipt of the report (i.e., of the medical referee's report), at a date and hour to be arranged, and the medical referee shall attend accordingly, but this regulation shall not authorise the medical referee being called as a witness." It will be observed that the medical referee is not introduced into the proceedings for the purpose of clearing up the doubt which may naturally arise in the mind of a lay arbitrator until after the hearing which should close the proceedings has taken place. Mr. Greene suggests that on the application of employer or workman a medical referee should sit with the arbitrator as assessor, on the grounds that he would thus be better able to advise the arbitrator from a medical aspect and that he might sometimes be able to clear up a doubtful medical point by a judicious question. Mr. Greene is of opinion that the occasion for such assistance by the medical referee would not often arise and that is, no doubt, why he suggests that he should only be present at the request of one of the parties. It is, however, so difficult to foresee what points may arise and what unexpected evidence may cause unlooked-for differences of opinion that it might fairly be contended that the presence of a medical referee was desirable in all cases where the nature and extent of the workman's injuries were not already ascertained beyond dispute. Any alteration in the rules which tended to introduce finality at as early a stage as possible in the proceedings should be welcomed by both parties, so long, of course, as possible injustice arising out of inevitable error was guarded against.

With regard to the personal qualifications and position of the medical referee Mr. Greene recommends that he should be the best man obtainable, rendered independent by being debarred from private practice and remunerated with an adequate salary. He suggests that recourse might be had to such men as have retired through the enforcement of an age limit from active connexion with the large hospitals and adds the recommendation that experience in ophthalmic surgery should form part of their qualifications. He would divide the country into areas of from 2000 to 4000 square miles, according to population and to the occupations of the population, and he goes into calculations based upon figures within his experience as to the number of cases which could thus be dealt with and which would be likely to occur. He points out that the services of the medical referee need not be confined to the Workmen's Compensation Act but that he could afford advice upon other occasions where medico-legal points arose.

Mr. Greene also draws attention to the possibility of improvement in other matters connected with the practical working of the Workmen's Compensation Act outside the office and duties of the medical referee. He points out the desirability of fixing a definite time limit within which the workman must take proceedings. At present he must claim compensation within six months but, having done so, may delay his request for arbitration for an indefinite period. Mr. Greene would permit the employers' medical representative to be present at a post-mortem examination held by order of the coroner in cases of death likely to lead to a claim for compensation. He refers to the hardship arising indirectly through the Act with regard to old, weak, and diseased workmen, owing to their predisposition to sustain injury or to continue incapacitated in consequence of it and predicts that a medical examination of

all workmen engaged will some day be necessary. He discusses the difficult question of the workman who refuses to submit to a simple and obvious surgical operation and who by his refusal may continue in a condition of disablement while at the same time he enjoys a pension paid by his employer. He also refers to the treatment of workmen by unqualified persons and to the danger of their injuries being thereby increased. For example, the injured workman improperly treated by a herbalist or other quack may suffer from blood poisoning and may require his employer to pay for a prolonged illness or his relatives may claim compensation for his death. Mr. Greene approves of the retention of the rule by which the workman can claim no compensation for the first 14 days after his accident and whereby he is discouraged from exaggerating trifling injuries. He illustrates his point with figures. An indemnity company compensating in respect of 34,601 workmen, but not paying for the first fortnight, had 1338 claims made against it in one year. An accident club in the same locality with 45,792 members, paying compensation for the first fortnight, including, of course, injuries of less than a fortnight's duration, had 8493 claims made against it in the same period. The workman who has once begun "to play" and has thereby got his muscles and the skin of his hands soft is obviously under a temptation to continue his rest for the longest period possible, and the employer at whose expense he does so naturally regards the payment of "compensation" where it is not necessary on account of disablement as unjust to himself.

The possible amendment of the Workmen's Compensation Act is, as has been suggested above, a matter of interest to all employers and workers besides those now affected, but, whether its scope is to be enlarged or not, it is desirable that the procedure under it should be made as far as possible, rapid, inexpensive, and conducive to just and fair results. At present the Act has not been a success, for such results as have been attained under it have led to an expense in litigation, through necessary appeals upon obscure points, that has been almost without parallel, and cases which have pressed with undue hardness upon the employer or, less frequently, upon the workman have not increased that goodwill and mutual confidence between master and man the existence of which is of great importance in a manufacturing community. The circumstances in which medical men appear as witnesses are often unsatisfactory and, as has been shown above, under the Workmen's Compensation Act the conditions imposed by law are such as to increase rather than to diminish the contradictions of medical opinion which are inherent in all legal proceedings when compensation for alleged injury is claimed and disputed.

MEDICAL GRADUATES' COLLEGE AND POLYCLINIC.

THE annual general meeting of the members of the Medical Graduates' College and Polyclinic was held at 22, Chenies-street, London, W.C., on March 28th, Dr. C. THEODORE WILLIAMS being in the chair.

Dr. WILLIAMS, in moving the adoption of the report and balance-sheet, said that the College was continuing its work satisfactorily. He regretted that they had for some time lost the services of Sir William Broadbent as their president, but he was glad to announce that that gentleman would take an active part, as he had always done, in their clinics. Dr. Williams then made a sympathetic reference to the death of Sir William Kynsey who had been a vice-chairman of the Polyclinic. Referring to financial matters, he announced amid applause that Mr. James Berry had been elected treasurer, which, he said, was a sure sign that they were to have good help in finance. The annual report showed that the number of members was keeping up very well. There was a slight falling off at one time when there was some doubt as to the future of the Polyclinic but the number had risen immediately after that under the able management of the secretary, Captain A. E. H. Pinch, with the result that it was hoped that the number of members shortly would reach 1000. Dr. Williams, continuing, said he did not think that the great advantages of the Polyclinic were sufficiently widely known. No other establishment offered the same kind of teaching that was to be found in the clinics held at 22, Chenies-street. The great point was that everything was arranged for the use and advantage of medical practitioners. He did not know of any place where a medical man could have the privilege in one year of examining something like 1000 cases and of hearing them demonstrated. The laboratory work at the Polyclinic under Captain Pinch had attained great perfection and it ought to be known that members would get their work done just as well by sending specimens to be examined at the Polyclinic as if they were forwarded to any similar research association. In regard to the composite course of lectures, its success was assured because no fee was to be charged in future. He did not know of any institution which gave its members 186 extra lectures without payment. Lectures were given by men of undoubted authority who had made certain subjects their own and who constituted a sort of court of appeal. In fact, someone had told him that there was only one appeal beyond the lecturers at the Polyclinic and that was the post-mortem room. Dr. Williams then referred with approbation to the change that had been made under the editorship of Dr. C. O. Hawthorne in the *Polyclinic Journal*. He concluded his remarks by describing the steps which had been taken to place the finances of the Polyclinic on a sound basis.

Mr. JAMES BERRY having seconded the motion, it was put by Dr. Williams to the meeting and carried unanimously.

A vote of thanks, proposed by Dr. G. CRAWFORD THOMSON, seconded by Dr. J. R. GABE, was duly passed to the retiring members of the council: Mr. S. Cathcart, Mr. W. H. A. Jacobson, Dr. Boyd B. Joll, and Dr. F. J. Payne.

The meeting then confirmed the interim election of Mr. E. Clarke and Dr. Hawthorne as members of council and the following five gentlemen were elected members of council: Mr. G. Lenthal Cheatle, Mr. J. Jackson Clarke, Dr. A. P. Luff, Mr. C. G. Drummond Morier, and Dr. H. Campbell Thomson.

A cordial vote of thanks to Dr. Williams concluded the meeting. It was a general matter of congratulation that peace and harmony had prevailed in place of the strenuous discussions which had characterised the last few meetings.

THE MINERAL WATER OF KARA-HISSAR-I-SAHIB.

WE have been favoured by His Excellency the Turkish Ambassador with a case of samples of this interesting mineral water, the source of which is a spring in the district Kara-hissar-i-Sahib, in the province of Broussa in Asia Minor. We understand that the water has been employed in the Hamidié Hospital for Women and Children, Constantinople. The temperature of the spring is 17° C.; the water is perfectly clear and bright and has an agreeable alkaline taste. It has a cleansing effect in the mouth and contains a slight excess of carbonic acid gas. On analysis the following results, given in grammes per litre, were obtained in THE LANCET laboratory:—

Sodium carbonate	2·24
Calcium carbonate	0·20
Sodium chloride	0·23
Borax	0·01
Total	2·68

The total saline constituents thus amount to 2·68 grammes per litre. The carbonic acid gas being in excess, the carbonates obtained on evaporation are present in the water as bicarbonates. There were present also traces of lithium salts but there was no evidence of organic impurity. A noteworthy constituent is borax. Generally speaking, this mineral water resembles in composition the waters of St. Galmier, Gieshübler, Fachingen, and Ems, all of which are reputed to be useful in diseases of mucous membranes. The alkaline waters of Fachingen, which resemble in particular that of Kara-hissar-i-Sahib in containing chiefly carbonate of sodium and chloride of sodium, are employed in diseases of the kidney and bladder. In some clinical reports emanating from the Hamidié Hospital it is stated that the water has been given with good results in chronic gastric affections, and in bronchial catarrh and also in affections of the bladder—e.g., cystitis. This favourable

action of the water may be referred to the alkaline salts and lithium which it contains, while borax is doubtless an important contributory factor. The water is exported in bottle, but there is no reason why the spring should not form the basis of a hydro-therapeutic establishment on the lines of the continental watering places mentioned above.

ROYAL COLLEGE OF PHYSICIANS OF LONDON.

ELECTION OF PRESIDENT.

AN extraordinary Comitia was held on March 28th, Sir W. S. CHURCH, Bart., K.C.B., the President, being in the chair.

The PRESIDENT delivered the usual annual address in the course of which he referred to the lives of eight Fellows who had died during the year—namely, Dr. E. L. Birkett, Dr. W. S. Playfair, Dr. W. H. Corfield, Dr. J. Tatham, Dr. Alfred Sangster, Dr. J. W. Hue, Sir E. Sieveking, and Dr. Alexander Davidson. The President then referred to the distinctions which had been conferred on certain members of the medical profession and to the award of medals, prizes, and scholarships connected with the College. He also detailed the lectures which had been delivered, especially drawing attention to the Harveian Oration and to the first FitzPatrick lectures. In speaking of the endowments presented to the College during the year he once more thanked Dr. Horace B. Dobell and Dr. George Oliver for their generosity. He then reviewed some of the work accomplished by the College and the many important committees which had been appointed during the year.

Dr. J. E. POLLOCK proposed that the College should express its thanks to Sir W. S. Church for having acted as President during the past five years and also for his address and should request permission to have it printed.

This motion was put to the College and carried by acclamation.

Sir W. S. CHURCH returned thanks to the College and acceded to the request to have his address printed. He then vacated the chair.

The Registrar (Dr. E. LIVEING) read the regulations which govern the election of President and the election was then proceeded with. At the first ballot the following was the result: Sir William S. Church, 44 votes; Sir William Broadbent, 42; Sir R. Douglas Powell, 35; Dr. P. H. Pye-Smith, 29; Dr. W. H. Dickinson, 3; Sir Dyce Duckworth, 2; Professor Clifford Allbutt, 2; Dr. J. F. Payne, 1; Dr. F. W. Pavy, 1; and Dr. Robert Barnes, 1. A second ballot was then taken with the result that Sir William Church was elected, receiving 91 votes while Sir William Broadbent received 69.

The charge was delivered by the Senior Censor (Sir DYCE DUCKWORTH) and the PRESIDENT pledged his faith to the College.

Sir W. S. CHURCH thanked the College for the honour conferred upon him in being again elected President.

A Licence to practise physic was granted to Colin Alexander Campbell, M.B. Toronto.

The College seal was set to a "Declaration of Trust" accepting a sum of £2000 from Dr. George Oliver for the endowment of "The Oliver-Sharpey Lectureship or Prize" on the terms agreed to at the last meeting.

The following communications were received: 1. From the Colonial Secretary, moving the College to establish an examination and diploma in tropical medicine. The matter was referred to the Committee of Management for report. 2. From the clerk of the Privy Council, asking on behalf of the "Physical Deterioration Committee" observations from the College on a scheme for establishing a permanent anthropometrical survey of the United Kingdom. The request was referred to the same committee that reported on the "Physical Disability of Recruits," the President to nominate two new members in place of Dr. G. Vivian Poore and Dr. J. J. Pringle who were unable to serve. 3. From the secretary of the Royal College of Surgeons of England, reporting certain proceedings of its Council on Feb. 11th and March 10th. 4. From the English committee of the International Congress on School Hygiene to be held at Nuremberg, April 4th to 9th, inviting the College to appoint a representative on the committee and to send delegates to the Congress. The President announced that he had nominated Sir Lauder Brunton to act as delegate of the College and Dr. F. Warner to serve on the committee. 5. From the secretary of the Sanitary Institute, inviting the College to send delegates to the annual congress to be held at Glasgow, July 25th to 30th. It was resolved to send delegates to the congress, the names to be announced at the next Comitia.

After some further business the PRESIDENT dissolved the Comitia.

Looking Back.

FROM

THE LANCET, *SATURDAY*, April 1, 1826.

THE FRENCH SYSTEM OF SURGICAL EDUCATION CONTRASTED WITH THE ENGLISH.[1]

FOR the following accurate history of the French system of surgical education, we are indebted to Mr. BENNETT, who, for several years, taught anatomy in Paris, and is well qualified to write on the subject.

In 1792, the National Convention decreed the suppression of all universities, colleges, corporations, &c., throughout France. However, before the expiration of two years, they found it indispensable to provide for the education of medical men, and in consequence Fourcroy and others were deputed to devise some system which, it was generally admitted, should be founded upon the principle, that "Medicine and Surgery were one and indivisible as the Republic." The Faculty of Medicine was shortly after organised, and formed the model upon which the other Faculties were subsequently constructed.

In Paris we at present find the following Faculties, who have entrusted to them the business of education in their respective departments, viz.:—

The Faculty of Theology
The Faculty of Law
The Faculty of Medicine
The Faculty of Mathematical and Physical Sciences
The Faculty of Letters.

There are similar bodies on the same plan, and for the same purposes, in other great cities of France.

Now the re-union of *all* the Faculties of any particular city, Paris for example, constitutes the Academy of that city; and the re-union of all the Academies of France constitutes *The University of France.*

The great officers of the University are—a Grand Master, a Chancellor, a Treasurer, and a Council; they reside in Paris, and their jurisdiction extends over all the academies in France; the accounts, expenditures, &c., are regulated by them, and they constitute a Court of Appeal.

Each Faculty confers the degree of doctor at the expiration of four years' study, after several public examinations; but the Faculty of Sciences, and that of Letters, confer, in addition, the subordinate degrees of bachelor in sciences and bachelor in letters. To obtain these latter, a student has but to present himself for examination.

For the *bachelorship* in letters, he is examined in the classics, history, geography, and rhetoric; for the *bachelorship* in sciences, he is examined in the elements of mathematics, physics, natural history, chemistry, botany, &c.

Before a student is admitted to become a pupil at *any of the Faculties*, with the view of subsequently taking a degree, he must first possess the degrees of bachelor of sciences and bachelor in letters, whereby a good primary education is insured on his part.

The election of PROFESSORS to the several Faculties was, prior to the restoration of the Bourbons, determined by "Concours," or a public trial of merit, a system still adhered to in the disposal of the minor offices.

In the year 1822, the Faculty of Medicine of Paris was suppressed through political motives, and the election of professors by concours was discontinued when the Faculty was reorganised in the following year. A new office was

[1] The details of the system of education prescribed at the Faculty of Medicine and of the manner of conducting the election of Professors by "Concours" and the "new regulations" of the "Royal College of Surgeons in London" have not been transcribed.

then created, that of "Agrégé" or Fellow—their number is unlimited; 24 were appointed by the Government in the first instance, and it is now determined to elect a small number annually, and by concours.—When a vacancy takes place amongst the professors, the chair is now filled by the Government electing an individual from the Agrégés to fill it.

REPORT OF THE PUBLIC HEALTH COMMITTEE OF THE METROPOLITAN BOROUGH OF POPLAR.

ON Feb. 26th, at the meeting of the public health committee of the metropolitan borough of Poplar, Mr. Frederick William Alexander, the medical officer of health, reported upon the introduction of a case of small-pox into the metropolis as follows:—

Small pox.

A coloured man suffering from small-pox walked into the Poplar Hospital on Feb. 18th and could give no proper account of himself except his name. He stated that he had been sleeping with other coloured men in a lodging house near a church in Poplar. The ambulance nurse, before taking the patient to the South Wharf, endeavoured to find out his address by calling at several lodging-houses but the patient was not known. As soon as the authorities at Poplar Hospital telephoned to the public health department that the case had been removed the chief disinfector commenced to call at the seamen's lodging-houses and common lodging-houses. The London County Council was communicated with so that the inspectors of the common lodging-houses might make inquiries. The medical officer of the South Wharf was telephoned to and asked to put further questions to the patient (who was evidently a sailor) as to the name of his ship and where he came from. The patient did not know the name of his ship but he stated that he had come from Newport News. The medical officer of the Port of London was immediately telephoned to and asked to make inquiries as to all ships which had arrived from Newport News. On the 19th the Port of London medical officer telephoned that the patient, with two other coloured men and nine other men, all cattlemen, had left the s.s. *Austriana* in Victoria Docks on the 16th but he did not know where they had gone to. In the meantime the sanitary inspector, Mr. Johnson, and the chief disinfector were making inquiries at the seamen's and common lodging-houses and Mr. Johnson found that the patient had slept at a common lodging-house in High-street, Poplar, with the two coloured men on the nights of Feb. 16th and 17th. The inspectors of the London County Council found some of the other "contacts" in common lodging-houses in Whitechapel. The two coloured men were revaccinated and taken to the Council's shelter in Glaucus-street to be bathed and to have their clothes disinfected. The men spent the night at the shelter and as there is no male attendant the chief disinfector slept in the shelter. The bed and bedding from three rooms at the common lodging-house were removed to the disinfecting apparatus and the three rooms were disinfected and limewashed.

Mr. Alexander further reported to the public health committee upon a letter received from the London County Council respecting the question of the amendment of the Bread Act as follows:—

Bread Acts (3 Geo. IV., Cap. cvi., 6 & 7 Will. IV., Cap. 37).

With respect to the letter of the clerk of the London County Council stating that the Council has under consideration the question of the desirableness of the Council seeking fresh legislation for the better protection of the public than is afforded under the existing law as regards the sale of bread, Mr. Alexander had the following remarks to offer. Bread is made and sold in the City of London and liberties thereof and within ten miles of the Royal Exchange under the Act of 3 Geo. IV., Cap. cvi., which was passed on July 22nd, 1822, and outside the ten-mile radius under the Bread Act of 6 & 7 Will. IV., Cap. 37, which was passed on July 28th, 1836. The statutes are almost identical. If the Bread Act of George IV. be repealed and the adulteration sections be re-enacted Mr. Alexander suggested that the adulteration provisions of the Act should be enforced by the sanitary authority. The adulteration sections of the Geo. IV. Act, being Sections ii., x., xi., xii., and xiii., and the penalty provisions which follow, should be re-enacted in modern language. A section should be inserted to the effect that meal or flour of wheat, barley, rye, oats, buck-wheat, Indian corn, peas, beans, rice, or potatoes should be stored separately in properly marked sacks or bins. The properly appointed officers of the local authority should have the right to enter any premises and without purchasing to take any samples of dough or bread, or samples of meal or flour of any grain from any sacks or bins, and to submit the same to the public analyst, and, if found to be adulterated, proceedings should be taken. The taking of samples in this manner, without purchasing, would not be a new procedure, as inspectors have power, for the purposes of analysis, to take without purchasing samples purporting to be butter and cheese—butter under Section 10 of the Margarine Act, 1887 (50 & 51 Vict., Cap. 29), and cheese under the Sale of Food and Drugs Amendment Act (62 & 63 Vict., Cap. 51, Section 5). The baker should be protected by warranty in a like manner as the vendor is protected under the Sale of Food and Drugs and Margarine Acts and then Sections x., xi., and xii. of Act of 3 Geo. IV., Cap. cvi., would, if re-enacted, be well met. The warranty would also apply to Section xii., so as to protect those persons who sell but do not make bread. So far as Section xii. is also concerned, which enacts that bread made of mixed meal or flour is to be marked with a large Roman M, it would be better that when bread is made wholly or partially of the meal or flour of any other sort of corn or grain than wheat, or of the meal or flour of any peas or beans, to have all such bread marked or stamped with the name of its component parts so as to be intelligible to the public who do not know what a large Roman M means. Potatoes should be added to this section as these ingredients are included in 6 & 7 Will. IV., Cap. 37, Section 10, which is similar to 3 Geo. IV., Cap. cvi., Section xii., but there is a proviso in Section 10 of the Bread Act of William IV. which can be added and is as follows:—

> Provided always that nothing in this Act contained shall extend or be construed to extend to require any bread made of the meal or flour of wheat only, and in the making of which potato yeast shall be used, to be marked as hereinbefore mentioned.

The powers of entry should be on the same lines as those proposed in the Bill of the London County Council (General Powers), clause 27:—

> The sanitary authority of any sanitary district, or any officer or person duly authorised by them in that behalf, shall have the right to enter at all reasonable times any house, building, or premises in that district for the purpose of examining whether there is any contravention of this part of this Act or of any by-law made thereunder, or for the purpose of carrying into execution this part of this Act or any by-law made thereunder.

The suggestions were adopted by the council of the metropolitan borough of Poplar.

At the same meeting Mr. Alexander, with very great regret, reported the death after a short illness of Mr. F. J. Anthony, sanitary inspector and inspector under the Food and Drugs Acts and canal boat inspector for the Bromley North Division. Mr. Anthony died on Feb. 24th. Mr. Anthony had been in the service of the Poplar sanitary authority since 1880, a period of 24 years. He first acted as disinfector and having qualified himself by passing the examination of the Sanitary Institute he was appointed sanitary inspector to the Bromley North Division in June, 1893. During his 24 years' service Mr. Anthony had also charge of the infectious disease mortuary belonging to the council in Wellington-road. The medical officer stated that he always found Mr. Anthony a most trustworthy and fearless officer.

ASYLUM REPORTS.

London County Asylum, Bexley Heath (Report for the year ending March 31st, 1903).—The average number of patients resident during the year was 2079, comprising 1019 males and 1060 females. The admissions during the year amounted to 519—viz., 224 males and 295 females. Of these 483 were first admissions. Dr. T. E. K. Stansfield, the medical superintendent, states in his report that a female nursing staff has been substituted for male attendants in the male infirmary wards, "a change that has so far been in every way satisfactory. It has added materially to the comfort, the general well-being, and the successful treatment of the patients concerned. ..... The success justifies an extension of the principle, but unfortunately the structural arrangements

of the asylum offer what at present appear to be insurmountable difficulties. This is a matter which, in my opinion, ought to receive very careful consideration when the plans of another asylum are being considered." Among the admissions melancholia was the form of mental disorder manifested in the largest number of cases (31·4 per cent.), mania was present in 26 per cent., and delusional insanity, principally of the paranoeic type, in 10 per cent. General paralysis affected 40 cases, or 7·7 per cent. "The physical condition of the admissions as a class was poor, and many, indeed, were mere human wrecks on the verge of dissolution." A hereditary predisposition to insanity was present in 28 per cent. of the admissions, a neurotic heredity was present in 14 per cent., tuberculous parentage occurred in 11 per cent., and alcoholic heredity in 6·5 per cent. Evidences of syphilis were made out in 106 cases, or 21 per cent. of the total number of admissions. The forms of mental disease with which it was principally associated were general paralysis (31 cases), acute melancholia (20 cases), acute mania (14 cases), primary dementia (eight cases), organic dementia (five cases), and delusional insanity (five cases). "It will thus be seen that the relation of syphilis to general paralysis was out of all proportion to that of any other form of mental disease." Alcohol as a personal factor was considered to be present in the causation of 103 cases, or 20·5 per cent., and it was an associated factor in 24 cases each of syphilis and neurotic heredity. The number of patients discharged as recovered during the year amounted to 180—viz., 76 males and 104 females, or 8·6 per cent. of the average number resident. The deaths during the year amounted to 250, or 12 per cent. as calculated on the same basis. Of the deaths five were due to senile decay, six to cerebral hæmorrhage, seven each to epilepsy and renal disease, eight to colitis, nine to bronchitis, 11 to syphilis, 19 to pulmonary and other forms of tuberculosis, 32 to cardiac disease, 61 to general paralysis of the insane, and the rest to other causes. The Commissioners in Lunacy state in their report that the wards and dormitories were in excellent order throughout, that the patients were in a satisfactory condition as regards dress and personal neatness, and that the medical case-books and post-mortem records were intelligently and carefully kept. The committee of management states in its report that improvements have been made in the electric battery supplying the light of the institution, that a hospital villa is to be provided for male patients at a cost of £13,000, and that the amount expended on additions, alterations, improvements, and repairs reached the sum of £5721.

London County Asylum, Horton (Report for the year ending March 31st, 1903).—The average number of patients resident during the year was 958, comprising 537 males and 421 females. The admissions amounted to 2019—viz., 1028 males and 991 females. Of these 2015 were first admissions. Dr. F. Bryan, the medical superintendent, states in his report that of the whole number of admissions 1544 were transfers from other asylums. "The asylum is now practically complete in all its departments and in full working order. ..... The chief difficulty during the year has been the engagement of a trustworthy staff. While the admission of patients has been regular, the supply of attendants and nurses has been very intermittent. ..... I believe that we have now the nucleus of a very good staff." The number of patients discharged as recovered during the year amounted to 88—viz., 49 males and 39 females, or 9·2 per cent. of the average number resident. The deaths during the year amounted to 108, comprising 70 males and 38 females, or 12·3 per cent. as calculated on the same basis. Of the deaths two were due to epilepsy, three to colitis, four to renal disease, five to senile decay, nine to pneumonia, 14 to pulmonary and other forms of tuberculosis, 16 to general paralysis of the insane, 28 to cardiac disease, and the rest to other causes. There have been four inquests during the year. In three of these the jury returned the verdict of "Death from natural causes." In the fourth the patient, during an attempt at suicide by choking died suddenly from syncope. The Commissioners in Lunacy state in their report that the asylum was opened for the general reception of patients from the County of London in March, 1902, and that it was designed to accommodate 2000 patients. A small isolation hospital for infectious cases forms part of the institution. "The organisation of the asylum," adds the report, "has made good progress," as was apparent at a visit made on July 15th, 1902. At a second visit on March 30th, 1903, the Commissioners state that the dress and personal appearance of the patients were found to be satisfactory, that the day-rooms, dormitories, and bedding were exceedingly well kept, and that the medical case-books were well and efficiently kept up to date notwithstanding the large number of admissions. As regards provision in case of fire it is suggested that arrangements should be made for a night watchman to be on continuous service in the main building during the whole year. The committee of management states in its report that the water-supply of the asylum is good in quality and sufficient in quantity, that the laying out of airing courts and paths in the grounds is fast approaching completion, and that the sum of £3302 was expended on repairs, additions, alterations, and improvements during the year.

Ennis District Asylum (Report for the year ending March 31st, 1903).—The average number of patients resident during the year was 398, comprising 213 males and 185 females. The admissions during the year amounted to 133—viz., 77 males and 56 females. Of these 74 were first admissions. Mr. Francis O'Mara, the medical superintendent, states in his report that the admissions were 11 in excess of those for the previous year and that the cause of insanity in 30 per cent. of them was due to hereditary predisposition. "In only five cases was intemperance in drink the alleged cause." The number of patients discharged as recovered during the year amounted to 35—viz., 20 males and 15 females, or 8·8 per cent. of the average number resident. The deaths during the year amounted to 26, or 6·5 per cent. as calculated on the same basis. Of the deaths one was due to renal disease, two were due to pneumonia, three to epilepsy, four to pleurisy, six to pulmonary and other forms of tuberculosis, and the rest to other causes. The health of the patients throughout the year was fairly good. In the months of November and December an epidemic of influenza occurred and 50 patients were attacked but without fatal results. Plans have been approved of, and prepared for, the extension of the asylum and a scheme for a new water-supply from Ballycoree Lake is under consideration. The Inspector of Lunatics states in his report that the food of the patients was of good quality; that the condition of the asylum on the whole was satisfactory in spite of some unavoidable degree of overcrowding which would, however, be soon relieved; that the patients appeared quiet and contented; and that the medical case-books and registers were well kept. The committee of management states in its report that the average weekly cost of maintenance per patient was 9*s.* 9*d.*, or nearly 6*d.* less than that for the previous year. The amount contributed from private sources in respect of the maintenance of the patients, having regard to the comparative poverty of the asylum district, continues satisfactory. There are now 36 patients on whose behalf such contributions are made and during the financial year a total sum of £477 4*s.* was received from this source.

VITAL STATISTICS.

HEALTH OF ENGLISH TOWNS.

In 76 of the largest English towns 8521 births and 5469 deaths were registered during the week ending March 26th. The annual rate of mortality in these towns, which had been 18·6, 19·0, and 19·7 per 1000 in the three preceding weeks, declined again last week to 18·7 per 1000. In London the death-rate was 18·4 per 1000, while it averaged 18·8 per 1000 in the 75 large provincial towns. Among these large towns the lowest death-rates were 8·7 in Willesden, 9·4 in Walthamstow, 9·6 in Hornsey, 9·9 in Leyton, 11·8 in Bootle, 11·9 in Croydon, 12·0 in East Ham, and 12·2 in Merthyr Tydfil; while the highest rates were 23·3 in Birmingham and in Burnley, 23·5 in Salford, 24·2 in Plymouth, 24·3 in Manchester, 24·5 in Birkenhead, 24·8 in Warrington, 28·7 in West Bromwich, and 30·0 in Stockton-on-Tees. The 5469 deaths in these towns included 532 which were referred to the principal infectious diseases, against 503, 500, and 539 in the three preceding weeks; of these 532 deaths 200 resulted from whooping-cough, 176 from measles, 51 from diarrhœa, 46 from diphtheria, 32 from scarlet fever, 21 from "fever" (principally enteric), and six from small-pox. No death from any of these diseases was registered last week in Hornsey, Leyton, Hastings, Bournemouth, Ipswich, Burton-on-Trent, or Bootle; among the other large towns the highest death-rates from the principal infectious diseases were recorded in Great Yarmouth, Norwich, Wolverhampton, St. Helens, Manchester, Salford, Burnley, Leeds, West Hartlepool, and

Gateshead. The greatest proportional mortality from measles occurred in Brighton, Norwich, Stockport, St. Helens, Manchester, Salford, Oldham, Burnley, Leeds, Sunderland, and Rhondda; from diphtheria in Great Yarmouth; and from whooping-cough in Wolverhampton, Walsall, Birmingham, Aston Manor, Salford, Burnley, West Hartlepool, and Cardiff. The mortality from scarlet fever, from "fever," and from diarrhœa showed no marked excess in any of the large towns. Of the six fatal cases of small-pox registered last week in these towns, one each belonged to London, West Ham, Nottingham, Birkenhead, South Shields, and Tynemouth. The number of small-pox cases remaining under treatment at the end of last week in the Metropolitan Asylums hospitals was 110, against 41, 54, and 74 at the end of the three preceding weeks; 54 new cases were admitted during the week, against 13, 21, and 26 in the three preceding weeks. The number of scarlet fever patients in these hospitals and in the London Fever Hospital, which had been 1578, 1601, and 1624 at the end of the three preceding weeks, had declined again to 1585 at the end of last week; 145 new cases were admitted during the week, against 153, 192, and 176 in the three preceding weeks. The deaths in London referred to pneumonia and diseases of the respiratory system, which had been 371, 414, and 375 in the three preceding weeks, rose again last week to 383 and were 131 above the number in the corresponding period of last year. The causes of 52, or 1·0 per cent., of the deaths in the 76 towns last week were not certified either by a registered medical practitioner or by a coroner. All the causes of death were duly certified in West Ham, Nottingham, Bradford, Newcastle-on-Tyne, Cardiff, and in 46 other smaller towns; the largest proportions of uncertified deaths were registered in Willesden, Birmingham, Smethwick, Liverpool, Blackburn, Burnley, and South Shields.

HEALTH OF SCOTCH TOWNS.

The annual rate of mortality in eight of the principal Scotch towns, which had been 21·2, 21·5, and 23·0 per 1000 in the three preceding weeks, declined again to 22·3 per 1000 during the week ending March 26th, but was 3·6 per 1000 in excess of the mean rate during the same period in the 76 large English towns. The rates in the eight Scotch towns ranged from 15·6 in Leith and 20·0 in Perth to 28·1 in Dundee and 31·6 in Paisley. The 737 deaths in these towns included 29 which were referred to whooping-cough, 22 to measles, 15 to diarrhœa, seven to small-pox, seven to diphtheria, four to "fever," and two to scarlet fever. In all, 86 deaths resulted from these principal infectious diseases, against 89, 68, and 85 in the three preceding weeks. These 86 deaths were equal to an annual rate of 2·6 per 1000, which was 0·8 per 1000 above the mean death-rate from the same diseases during the week under notice in the 76 large English towns. The fatal cases of whooping-cough, which had been 36, 21, and 24 in the three preceding weeks, further rose to 29, of which nine occurred in Aberdeen, seven in Edinburgh, four in Glasgow, three in Paisley, three in Leith, and two in Greenock. The deaths from measles, which had been 22, 20, and 23 in the three preceding weeks, declined again to 22 during the week ending March 26th, and included 15 in Glasgow, three in Dundee, and three in Greenock. The fatal cases of diarrhœa, which had been 19, 13, and 18 in the three preceding weeks, increased again to 19, of which eight were registered in Glasgow, four in Dundee, and two Greenock. The deaths from small-pox, which had been three, five, and seven in the three preceding weeks, were again seven during the week under notice, and included four in Greenock, two in Glasgow, and one in Leith. The fatal cases of diphtheria, which had been five, four, and three in the three preceding weeks, increased again to seven, of which three occurred in Glasgow. The deaths referred to diseases of the respiratory organs in these towns, which had been 155, 156, and 185 in the three preceding weeks, declined again to 165 during the week ending March 26th, but were 65 in excess of the number in the corresponding period of last year. The causes of 24, or more than 3 per cent., of the deaths registered in these eight towns were not certified.

HEALTH OF DUBLIN.

The death-rate in Dublin, which had been 26·4, 28·3, and 27·7 per 1000 in the three preceding weeks, rose again to 30·4 per 1000 during the week ending March 26th. During the past four weeks the death-rate has averaged 28·2 per 1000, the rates during the same period being 18·8 both in London and in Edinburgh. The 221 deaths of persons belonging to Dublin registered during the week under notice showed an excess of 20 over the number in the preceding week and included 14 which were referred to the principal infectious diseases, against 13, 11, and 20 in the three preceding weeks; of these, five resulted from measles, five from whooping-cough, two from diphtheria, one from "fever," and one from diarrhœa, but not any from small-pox or from scarlet fever. These 14 deaths were equal to an annual rate of 1·9 per 1000, the death-rates last week from the principal infectious diseases being 1·7 in London and 1·3 in Edinburgh. The five fatal cases of measles showed a slight increase over the number in the preceding week. The deaths from whooping-cough, which had been ten, six, and 13 in the three preceding weeks, declined again last week to five. Two fatal cases of diphtheria were registered, against one in the preceding week. The 221 deaths in Dublin last week included 43 among children under one year of age and 58 among persons aged 60 years and upwards; the deaths of infants were slightly in excess, while those of elderly persons showed a marked increase over the number in the preceding week. Eight inquest cases and six deaths from violence were registered, and 91, or more than a third, of the deaths occurred in public institutions. The causes of 14, or more than 6 per cent., of the deaths registered in Dublin last week were not certified.

THE SERVICES.

ROYAL ARMY MEDICAL CORPS.

Lieutenant-Colonel C. R. Bartlett, Hounslow, holds himself in readiness for duty at Sierra Leone. Major O. R. A. Julian, C.M.G., is appointed to the Thames District for duty. Lieutenant-Colonel H. L. E. White joins at Woolwich for duty as recruiting medical officer. Major V. H. W. Davoren is ordered to the Western District for duty. Surgeon-Captain A. Macdonald, A.M.R., assumes medical charge of the Headquarter Staff, Edinburgh, vice Surgeon-Captain J. A. Clark, A.M.R.

ARMY MEDICAL RESERVE OF OFFICERS.

Surgeon-Major J. G. Saville to be Surgeon-Lieutenant-Colonel (dated March 15th, 1904). Surgeon-Major F. H. Appleby to be Surgeon-Lieutenant-Colonel (dated March 15th, 1904). Surgeon-Lieutenant C. W. Marshall, 1st Volunteer Battalion, Princess Louise's (Argyll and Sutherland Highlanders), to be Surgeon-Captain (dated March 26th, 1904).

THE WAR IN THE FAR EAST.

The *Sviet*, a Russian journal, says that in a short time several Roentgen-ray apparatus will be sent forward to the front for use on behalf of the wounded.

According to the *Novoe Vremya*, the government zemstvo (council) of Moscow in allocating funds decided to institute a series of medical supply depots on the route followed by the army and the zemstvos of other governments have decided to assist in the organisation of this service.

Amongst the questions affecting the supply of materials to the hospitals, &c., at the seat of war, says the *Novoe Vremya*, there is that of furnishing good drinking water, which raises the question of a large supply of ice. The executive committee of the Red Cross Society has decided to take measures to supply the hospitals, &c., in Southern Manchuria with ice-making machines. At the same time large provisions of natural ice will be made at various points.

A note in the *Novoe Vremya* says that half of the students at the Women's Medical Institute have expressed their readiness to go to the Far East. It is stated that at this institute over a thousand women are zealously studying in all branches of medical knowledge. The establishment is supported by voluntary contributions and without aid from the Government. The hopes which had been entertained that the Government might be able to lend material aid have naturally now been weakened by the outbreak of war.

The under-mentioned gentlemen have been appointed dental surgeons to the troops from April 1st, 1904, under the conditions already announced: C. D'E. Foubert, L.D.S.R.C.S Irel.; A. Rice, L.D.S.R.C.S Eng.; H. G. H. Cowell, L.D.S.R.C.S. Edin.; H. C. Toone, L.D.S.R.C.S. Eng.; J. B. Gillies, L.D.S.R.C.S. Eng.; C. W. Randall,

L.D.S. R.C.S. Eng.; A. F. A. Howe, L.D.S. R.C.S. Eng.; and J. K. Clark, L.D.S. R.C.S. Eng.

Inspector-General of Hospitals and Fleets (retired) A. B. Messer, honorary physician to His Majesty the King, has been awarded the Greenwich Hospital pension of £100 a year, rendered vacant by the death of Inspector-General William Macleod, C.B.

Lieutenant-Colonel L. A. Waddell, C.I.E., I.M.S., has been appointed Principal Medical Officer and Antiquarian with the Thibetan Mission and escort.

Correspondence.

"Audi alteram partem"

NEUROTIC HEREDITY AND CANCER.

To the Editors of THE LANCET.

SIRS,—Although cancer is not especially frequent amongst asylum populations, yet the instances of its occurrence (visible or verified by necropsy) which have come under my notice in asylums have been in cases of hypochondriacal melancholia and imbecility, psychoses in which neurotic heredity is seldom or never absent. In private practice neuropathic conditions in cancerous patients or their near relatives are met with or heard of so frequently in comparison with the apparently direct transmission of cancer that one is impelled to believe that the real hereditary connecting link between the cancer of the parent and that of the offspring is not cancerous but neurotic. Taking in the first place those of my own cases in which the cancer was distinctly visible or tangible and otherwise perceptible (of cervix uteri, pharynx, neck, or tongue), and the diagnosis, moreover, confirmed by other medical men, I find I have notes of six cases in which either the patient or a near relative (son, daughter, father, mother, brother, or sister)—sometimes the patient and several relatives—presented one or more of the following conditions: hysteria, neurasthenia, transitory delusional and hallucinatory attacks, general paralysis (in a male patient's father), eccentricity, weak-mindedness, paraplegia, spastic paraplegia, marked asymmetry, malformation of the ears and other features, opaque nerve fibres, phthisis, or anæmia. Then five other of my cases (gastric, vesical, or renal cancer) presented in themselves or the near relatives eccentricity, delusions of suspicion, extreme timidity, migraine, severe neuralgia, excessive intolerance of pain, strabismus, malformation of the ears, or transverse fissuring with puffiness of the lips.

Straban (quoted by Talbot, "Degeneracy,") gave an account ("Marriage and Disease") of a family of which the father died from gastric cancer at 60 years of age, a paternal uncle cut his throat at 56 years of age, and the mother died from a fit at 54 years of age. There were seven children; of these one died from cancer, one from convulsions in infancy, and three from phthisis, one was epileptic (had been twice in asylums and was married, without issue), whilst only one was sane and fairly healthy. Referring to history one finds illustrious victims of cancer who have been undoubtedly neurotic. Napoleon is an instance in point. Witness his epileptic fits, his window-counting obsession or obsidional impulse, and his intense egoism, not to speak of his "star" and his "familiar" which may have been mere clap-trap. Other illustrious personages who have died from cancer have had relatives eccentric, epileptic, suicidal, paralytic, or periodically insane.

Let us now reverse the process and look from the neurotic subject to the cancerous relatives. A young adult female patient of mine who suffered from severe though curable chorea was descended from grandparents two of whom (the maternal) died from cancer; her mother is neurotic, eccentric, and the subject of chronic eczema, and her maternal aunt has had a cancerous breast removed. Two female patients suffering from dementia præcox sprang from a grandfather who died from gastric cancer at the age of 60 years, whose brother and sister died at a later age from senile dementia, and of whose sons one was a no'er-do-well, three were alcoholic (two of whom died from phthisis), and one was kyphotic. A female patient, aged 62 years, who has nearly all her life suffered intensely from symptoms which she prefers to call "nerves"—viz., pains and paræsthesiæ of all sorts, with fancies that she is affected with any fatal disease of which she hears, so that in some of her periodical exacerbations her condition has bordered on agitated melancholia—had a brother who died from cancer of the throat. Her daughter and sons are distinctly neurotic and eccentric. Her daughter has four children, each of whom is, or has been, affected with one or more of the following—viz., chorea, convulsions, nystagmus, chorea major, flightiness, unruliness, dwarfism, congenital cataract, aural and ocular malformations, dorsal hairiness, psoriasis, molluscum, and rickets.

Talbot ("Degeneracy") quotes from Kiernan[1] a description of a degenerate family of which the following are some of the items. The progeny of a nymphomaniac and her strabismic migrainous cousin were a no'er-do-well, a periodical lunatic, a dipsomaniacal daughter who died from gastric cancer, deformed triplets who died at birth, an epileptic imbecile son, a hermaphrodite, a prostitute, a double monster born dead, a normal daughter, and a paranoiac son. The progeny of a female sexual invert and her cousin, a versifier, soon divorced, were a daughter with periodical nymphomania, who had some artistic and literary ability, and a son who died from gastric cancer. The progeny of a normal woman and her ataxic husband were a dead-born sarcomatous son, a gouty son, twin boys paralysed in infancy, twin girls normal, a normal son, and a son ataxic at 14 years of age.

As collateral evidences may be adduced: 1. The marked relationship between the presence of nerves and the spread and limitation of cancer in the skin and muscles, as shown by Mr. G. Lenthal Cheatle[2] (The common origin of the epidermis and the great nervous centres from the epiblast is worth bearing in mind in this connexion.) 2. The fact observed by Mr. D'Arcy Power[3] that after operation recurrence is diminished in frequency and postponed by change of scene and surroundings, which is well known to be a useful measure in the treatment of diseases of the nervous system. 3. The beneficial action of radium on some malignant and certain nervous diseases.[4] 4. The simultaneous increase of cancer and functional nervous diseases in civilised communities. 5. The markedly greater incidence of cancer in certain urban (Australian metropolitan) than in the surrounding rural districts.[5] (Syphilis, alcoholism, and tuberculosis are much more probably co-results with cancer of urban life than causes of the disease.) 6. The rarity of cancer as well as of nervous diseases amongst savages.

It may be objected that animals suffer from cancer. But are they not also subject—at all events, those of which we know most—to chorea, convulsions, paralysis, and hydrophobia? The observations here submitted are too few to be conclusive, but I think they are sufficiently numerous and relevant to warrant investigation in this direction. Those who are best fitted to offer evidence on the point are private practitioners who actually *know* the patients and their near relatives. Should it be proved conclusively that the neurotic—not necessarily the degenerate—constitution is a predisponent of cancer it hardly needs saying that the knowledge of this relationship would be of great service in the diagnosis of the early stages and perhaps to some extent even in the prophylaxis of that disease.

I am, Sirs, your faithfully,

Liverpool, March 16th, 1904. JAMES SHAW, M.D. R.U.I.

P.S.—That cancer is, or appears to be, most common in districts which are very well watered and wooded is by no means an insuperable bar to the acceptance of the view that neurotic heredity is the chief predisposing cause of the disease. Such districts must naturally include deep secluded valleys where insalubrious climatic conditions and the custom of intermarrying closely tend to accentuate and to perpetuate any original neurotic taint.—J. S.

PARTIAL RESECTION OF THE ASTRAGALUS FOR TALIPES VARUS.

To the Editors of THE LANCET.

SIRS,—I am not aware if the undermentioned simple modification of Lund's operation for talipes varus has been tried before. In September, 1902, I was asked to see a boy,

[1] Medicine, September, 1897.
[2] Brit. Med. Jour., Dec. 12th, 1903.
[3] Quoted in the Hospital, Dec. 19th, 1903.
[4] Dr. A. Darier: THE LANCET, March 5th, 1904, p. 652.
[5] Dr. G. Cooke Adams: THE LANCET, Feb. 13th, 1904, p. 422.

aged eight years, who since the age of three years had been unable to walk (even to school). I found a typical case of talipes varus. The lad was placed under chloroform by my assistant and after tenotomy of the tibialis anticus and posticus I made an incision through the skin over the dislocated portion of the astragalus and drawing the tissues on each side I removed a wedge-shaped piece of this bone as large as possible but leaving the articular surfaces (the apex being downwards). After tenotomy of the tendo Achillis I dressed the wound and put on a splint of my own construction. The plantar fascia I left intact as I considered in so young a subject that it would stretch. The wound healed rapidly. The boy used a pair of Messrs. Down Bros.' boots until they wore out, since when he has used ordinary ones. He can now run about without trouble. I would draw your notice to the following points: (*a*) the ease with which the operation was done in a cottage, taking less than 30 minutes; (*b*) the fact of it being practically bloodless; and (*c*) the deep restraining ligaments being apparently reached without difficulty. I have not had an opportunity of performing this operation again but thought perhaps that someone more fortunately situated might like to try it.—I am, Sirs, yours faithfully,

ALFRED W. HAYLES,
March 25th, 1904. Surgeon to the Cwmbran Colliery, &c.

PREVENTION OF INFECTIOUS DISEASE IN BATH.

To the Editors of THE LANCET.

SIRS,—In his letter in your issue of March 26th, p. 896, Dr. Preston King has shifted somewhat from the very decided position he took up in his previous communication, inasmuch as he now admits that if Section 126 of the Public Health Act, 1875, be taken alone my contentions are quite right.

It was his definite statement to which I chiefly took exception, because I was satisfied he could not support it by any section of any Act of Parliament. I know that many others share his opinion in this matter, but I entirely disagree with this view of the question and as the point involved seems to me to be an important one I will give a few of the reasons upon which I base the opinion I hold. In the first place I will point out that the word "dangerous" does not appear in the Notification Act. Had this been so Dr. King's case would have been a much stronger one, but the absence of that important word, in my opinion, materially weakens his argument. Again, the objects of Section 126 and the Notification Act are not altogether similar. The sole purpose of Section 126 is to prevent the spread of dangerous infectious disorders, whereas the primary object of the Notification Act is to provide for the notification of infectious disease to local authorities. Of course, I am aware that its ultimate object is the prevention of the spread of infectious diseases. The Notification Act gives power to local authorities to make diseases notifiable for temporary periods. This has been frequently taken advantage of in the case of chicken-pox. Now chicken-pox is not scheduled because it is a dangerous infectious disorder but because it very much resembles mild and modified forms of small-pox. It is simply done to obtain information and to enable the authority to investigate these cases and to secure as far as possible the notification of all cases of small-pox.

Does a step of this kind on the part of a sanitary authority cause Section 126 to apply to chicken-pox? Can chicken-pox be a dangerous infectious disorder one week and cease to be so during the next? The Infectious Diseases (Notification) Act was adoptive and was not put into force throughout the country; consequently, if Dr. King's contentions be right, then Section 126 had a different application in different local government districts, according to whether the Notification Act was adopted or not and according to whether other diseases than those mentioned in the Act were included therein. Surely it cannot be argued that an adoptive Act could define and modify in a district in which it was not in force an important section of the Public Health Act, which Act is the foundation of the whole sanitary administration of the country. In 1899 the Notification Act was made compulsory throughout the country except in Huddersfield. This Act not being in force in Huddersfield, has Section 126 a different application in that borough?

It seems to me most unlikely that erysipelas can be held to be a dangerous infectious disorder and the so-called puerperal fever is only dangerous and infectious to lying in women. It is neither dangerous nor infectious so far as the general public are concerned. Consequently if Section 126 applies at all to this disease that application must be of a very partial and limited character. Therefore, seeing that the legislature included in the Notification Act diseases that are not dangerous infectious disorders in the true sense of the term and did not include therein diseases that admittedly bear those characteristics, how can it be held with any weight of reason or force of argument that Parliament intended the Notification Act to define, to modify, and to limit the application of Section 126 of the Public Health Act? The vagueness is in the assumption that Parliament intended this rather than in the meaning of the term "dangerous infectious disorder."

I am, Sirs, yours faithfully,
Halifax, March 28th, 1904. J. T. NEECH.

SYPHONAGE AND HYDRAULIC PRESSURE IN THE LARGE INTESTINE.

To the Editors of THE LANCET.

SIRS,—I gather from Dr. Keith's remarks in a recent number of THE LANCET that he has seen only the brief account given in the reprint, with notes, of my article in the *Edinburgh Medical Journal*, but much additional evidence will be found in my book (Churchill). A large part of Dr. Keith's criticism is directed against the existence of tonicity in the longitudinal bands, but all of this falls to the ground, for the fact has been confirmed by actual observation. I used glass tubes in most of my experiments because I wanted to see what was going on, but I obtained precisely the same results with a length of old garden hose, bent to imitate the flexures of the colon, and I contend that the concertina-like shortening of the bowel and other by-effects of the tonic contraction would give a rigidity at least equal to this. Moreover, I pointed to many clinical and other phenomena which are perfectly explained by the syphon hypothesis and by no other.

Arguments drawn from observations in animals have but little bearing upon the case, for the simple reason that the colon is horizontal. Were this the case in man peristalsis, though handicapped by the presence of saccules and the absence of any true circular fibres, would probably suffice. To take a case of orthopnœa, of perhaps years' duration, how can peristalsis of a large-bored and feeble ascending colon suffice alone to propel the intestinal contents? Dr. Keith also seems to question my point that the ileo-cæco-colon is constructed on hydraulic lines, but surely this is indisputable and has only to be pointed out to be at once recognised. It has, at any rate, the endorsement of a large number of physicists with whom I have been in communication.

I am, Sirs, yours faithfully,
March 26th, 1904. R. W. LEFTWICH.

A DISCLAIMER AND PROTEST.

To the Editors of THE LANCET.

SIRS,—I have just received by post a book entitled "Fruitless Experiment," edited by Stephen Smith, M.R.C.S., and published by the London Anti-Vivisection Society, in which my name appears as a contributor. I should esteem it a favour if you would allow me to state that the article in question is published without my knowledge or consent and that I strongly object to the unauthorised use of my name and work in this connexion.

I am, Sirs, yours faithfully,
Welbeck-street, W., March 28th, 1904. WILLIAM MURRELL.

THE INSTITUTE OF MEDICAL SCIENCES APPEAL AND SIR DONALD CURRIE'S GIFT.

To the Editors of THE LANCET.

SIRS,—Your leading article of last week, commenting on the munificent gift of Sir Donald Currie to the school of advanced medical studies about to be formed in connexion with University College Hospital contains the following: "It is possible that Sir Donald Currie's gift will indirectly postpone the completion of the scheme of building new laboratories at South Kensington."

We hope and believe that, on the contrary, it will, by drawing attention to the needs of the University and its medical faculty, stimulate other donors to come forward and thus enable the Senate, now that the success of the scheme for the incorporation of University College is so nearly assured, to carry through the second important proposal which it has put forward—viz., the founding of an institute of medical sciences at South Kensington, the necessity for which is in no way affected by Sir Donald Currie's gift. A large sum is still required for this purpose and donations will be gratefully acknowledged by

Yours faithfully,

J. K. FOWLER,
H. T. BUTLIN, } Honorary treasurers, Institute of Medical Sciences Fund.

35, Clarges-street, W., March 28th, 1904.

NOTES FROM INDIA.

(FROM OUR SPECIAL CORRESPONDENT.)

The Plague Epidemic: Continued Rise in Mortality.

THERE has been a steady increase in the number of deaths from plague throughout India during the past three weeks and the weekly total is approaching 30,000. The principal increases are in the Punjab and the Bombay Presidency but the disease is raging in the United Provinces and is developing in Kashmir. Bombay city records about 100 deaths a day and the recrudescence is rapidly developing in Calcutta. Karachi city is again very severely attacked and compared with other places the outbreak is widespread and virulent. Both Calcutta and Bombay city seem to show this year a lateness in the annual recrudescence, but while this recurrence in Calcutta has been hitherto very regular in season there has been a tendency to develop later each year in Bombay. In Karachi the outbreaks have generally developed in the teeth of the hot weather. Although there is no reported plague in Madras city the general mortality is very high (45·7 per 1000) and there is no epidemic of cholera or small-pox to account for it. The ten years mean is 34·9. The first division of the city shows a death-rate of 50 per 1000. The sanitary administration of this city is behind the times and the commissioners have recently declined to allow the health officer to meet those of Bombay and Calcutta for consultation upon an improved system of death returns. There is no municipal laboratory in Madras city, which is put down to poverty but which can only be explained by indifference in sanitary matters.

The health officer's report for Bombay during the last quarter of 1903 shows a death rate of 36·76 per 1000, notwithstanding that plague was much less than in the corresponding week of the previous year. The municipal dispensaries seem to be working well. The registration of births and the vaccination of infants seem to be very defective in Bombay but in this respect Calcutta is just as bad, if not worse.

March 10th.

LIVERPOOL.

(FROM OUR OWN CORRESPONDENT.)

The Diploma in Public Health at the University of Liverpool.

THE University of Liverpool has enlarged its sphere of usefulness by the institution of a diploma in public health. The diploma will be awarded only to candidates who shall have passed the prescribed examination and before entering for any part of it they must have held for not less than 12 months a registrable qualification in medicine, surgery, and midwifery. They must also present satisfactory certificates of having attended approvedcourses of study. The examination for the diploma will be held once yearly, at the end of the summer term. The first examination will take place at the end of the summer term, 1904. The examination will be conducted in two parts and candidates may present themselves in Parts I. and II. separately or at the same time, provided that no candidate will be admitted to Part II. unless he shall have satisfied the examiners in Part I. No candidate's name will be published until he has been successful in both examinations. Prior to admission to the examination he must have presented satisfactory evidence (1) of having attended, during at least three months, an approved course of instruction in public health at the University; (2) of having attended (after obtaining a registrable qualification) during at least six months practical instruction in the laboratories of the University in chemistry as applied to public health, bacteriology, and the pathology of those diseases of animals which are communicable to man; (3) of having attended during not less than three months (after obtaining a registrable qualification) the clinical practice of an approved hospital for infectious diseases; (4) of having (after obtaining a registrable qualification) during six months (of which at least three months shall have been distinct and separate from the period of laboratory instruction required under 2) been diligently engaged in acquiring a knowledge of the duties, routine and special, of public health administration under the supervision of a medical officer of health who is also a teacher in the department of public health of a recognised medical school; or (1), in England and Wales, the medical officer of health of a county, or of a single sanitary district having a population of not less than 50,000, or a medical officer of health devoting his whole time to public health work; or (2), in Scotland, a medical officer of health of a county or counties or of one or more sanitary districts having a population of not less than 30,000; or (3) in Ireland, a medical superintendent officer of health of a district or districts having a population of not less than 30,000. The subjects of examination in Part I. shall comprise chemistry, microscopy, physics, and engineering, all as applied to public health, together with practical pathology and bacteriology. Part II. will include the etiology of disease, sanitary law and administration, vital statistics, sanitary reporting, and practical examination in infectious diseases. The fee for the examination for the diploma shall be £5 5*s*.

University of Liverpool: First Degree Ceremony.

The University of Liverpool conferred its first degrees on March 25th; the occasion was one not merely of interest but also opened a new chapter in the academic record of the city. In the absence of the Chancellor (the Earl of Derby, K.G.) the ceremony was performed by the Vice-Chancellor (Principal A. W. W. Dale). The degrees conferred were those of bachelor of medicine and bachelor of surgery, the recipients of which were Mr. Stanley Brown, Mr. William E. Cooke, Mr. Arthur Hendry, and Mr. Herbert R. Hurter. The Vice-Chancellor, addressing the new graduates, said they would stand first on the roll that now opened. Their names would head a list which the years as they passed would lengthen. But even now they would not stand alone for any length of time, for the University had extended an invitation of incorporation to graduates of the Victoria University of Manchester who received their teaching and training in Liverpool and the manner in which that invitation had been accepted was enough to prove its wisdom. Already more than 300 applications for incorporation had come in and almost every post was adding to the number. Until those letters reached him he had hardly realised how much work the old college had done, how much its influence had spread, and to what remote continents and under what strange skies. The four graduates were presented by the Dean of the medical faculty (Professor B. Moore) to the Vice-Chancellor who, in formally admitting them, said: "By virtue of the authority vested in me I admit you to the degrees of bachelor of medicine and bachelor of surgery." The ceremony took place in the Senate room of the University.

Liverpool Chamber of Commerce: Appointment for Professor R. W. Boyce, F.R.S.

At a meeting of the committee of the African trade section of the Liverpool Chamber of Commerce held on March 16th it was resolved, on the motion of Sir Alfred Jones, K.C.M.G. (the chairman of the section), that Professor Rubert W. Boyce of the University of Liverpool and Dean of the Liverpool School of Tropical Medicine should be appointed as a special advisory member of the committee in matters relating to health and sanitation. Professor Boyce had taken a great interest in the sanitation of the West Coast of Africa and his appointment as a special member of the African trade section of the Chamber of Commerce is recognised as a fitting tribute to his energies in that direction.

Presentation to Dr. Thomas Clarke, J.P.

An interesting ceremony took place at the town-hall on March 23rd, the occasion being a presentation to ex-Alderman

Dr. Thomas Clarke from his former colleagues of the city council, from which body he retired in November of last year. The Lord Mayor, who was accompanied by the Lady Mayoress, made the presentation which consisted of a richly chased silver Georgian tea and coffee service and salver and on the latter was engraved the following inscription: "Presented to Alderman Thomas Clarke, J.P., from his colleagues in the city council as a mark of their high esteem and personal regard upon the occasion of his retirement. November, 1903." Dr. Clarke was a member of the city council for 11 years and during that time he occupied the chairmanship of the hospitals committee. When he began his work in connexion therewith the accommodation in the city hospitals was limited to about 350 beds, now there was accommodation for close on 1000 patients. Dr. Clarke, in returning thanks for the gift, said the advance which had been made in the manner in which cases of infectious disease were treated by public bodies was very remarkable and that Liverpool was now, or shortly would be, in a position to meet all possible requirements and would take a very high place among the cities of the Empire in regard to the ample accommodation provided for dealing with those diseases.

Health Committee and Vaccination.

The health committee of the city council passed a resolution on March 17th informing the Local Government Board of its approval of the Revaccination Bill now before Parliament and requesting the Board to do all in its power to secure its becoming law.

Cheshire Hospital Scheme.

The joint Mid-Cheshire hospital authority decided to apply to the Local Government Board for power to borrow £14,500 for the erection of an isolation hospital for Northwich rural and Northwich, Winsford, and Middlewich urban districts. The entire scheme is estimated to cost about £16 000, one-third of which will be borne by the Cheshire County Council. The authority is the first joint hospital committee created under an order in Cheshire.

March 28th.

WALES AND WESTERN COUNTIES NOTES.

(FROM OUR OWN CORRESPONDENTS.)

Health Report of the Sanitary Authority of the Port of Cardiff.

Dr. Edward Walford, the medical officer of health of the Cardiff Port sanitary authority, has just issued his annual report and a perusal of its pages reveals the indebtedness not only of Cardiff but of the adjacent districts to the sanitary staff of the authority, for it is due to its vigilance that cases of infectious disease upon incoming vessels are detained at the port of Cardiff. During 1903 five cases of small-pox, 12 of typhoid fever, and one of diphtheria were thus detained and treated in the Cardiff borough isolation hospital. No cases of plague or of cholera were brought into Cardiff, although 20 vessels entered the port from places which were either infected, or suspected of being infected, with plague, and the medical officer of health examined in accordance with the Local Government Board regulations 513 persons on the suspected ships. In connexion with these 20 vessels the rat-catchers employed by the port sanitary authority destroyed 1405 rats, either in traps or by sulphurous acid gas, the carcasses being burned. Cardiff is well provided with an isolation hospital, situated on Flat Holme Island, in the middle of the Bristol Channel, for cholera, yellow fever, or plague patients. There is accommodation for 16 patients in three wards and there is ample room on the island for the erection of tents or huts. A crematorium is attached for the destruction by burning of the bodies of persons dying in the hospital. The institution belongs to, and is administered by, the Cardiff authority but the Bristol authority has the use of the crematorium while the Barry and Newport authorities pay an annual sum of £40 and the Bridgwater authority pays an annual sum of £20, in return for which patients are received from the three districts named and charges are made of three guineas a week for the first patient received and two guineas a week for every additional patient and a further sum of seven guineas in respect of the cremation of the body of any of these patients who die in the hospital. Of the 11,674 vessels which entered the port during 1903 no fewer than 8072 were inspected by Dr. Walford's staff of six inspectors and 1228 had one or more sanitary defects. Dr. Walford states that shipowners and masters willingly carry out the recommendations of the port sanitary authority, with the result that the proportion of vessels having sanitary defects amongst those which frequent the port of Cardiff has decreased in a very marked degree. The Cardiff and county public health laboratory rendered useful aid in examining bacteriologically the drinking-water from 66 vessels. In 46 instances the samples were found to be impure.

New Workhouse at Newport.

The new workhouse which has been erected by the Newport (Mon.) board of guardians was formally opened on March 26th. The population of the Newport union is approaching 120,000 and the accommodation provided in the new buildings is for 600 inmates. The total cost is £58,900, a sum considerably in excess of the original estimate of £37,000 made four years ago. The ten blocks for the inmates include four for men, four for women, one for eight married couples, and one for infants. Each of these blocks has a separate yard and garden. There are telephones between the principal blocks and most of the buildings are lighted by electricity.

Vagrancy in Monmouthshire.

The Monmouth board of guardians has been making successful efforts to deal with the large number of able-bodied tramps who pass through the county. Permission was obtained last year from the Local Government Board to increase the task of stone breaking from four to six hundredweights and it was decided that every tramp who refused to complete his task should be dealt with by the justices. During the past six months an average of six men monthly have been imprisoned for periods varying from 14 days to one month and a marked diminution in the number of tramps calling at the workhouse has taken place. In the first quarter of 1903 the number was 1073, but during the same period of the present year it was only 577.

Keynsham Rural District Health Report.

Mr. J. C. Heaven, the medical officer of health of the Keynsham rural district, which lies between Bristol and Bath, reports a death-rate of 9 52 per 1000 among a population of 8507 persons during 1903. This is lower than any death-rate recorded in the district during the past ten years. There was only one death from infectious disease during the year, the case being one of scarlet fever.

March 28th.

SCOTLAND.

(FROM OUR OWN CORRESPONDENT.)

University of Glasgow: New Appointment.

THE Glasgow University Court has at a recent meeting appointed Mr. Frederick Soddy, M.A. Oxon., lecturer on physical chemistry for five years, the appointment to date from Oct. 1st next. Mr. Soddy is well known for his work in radio-activity which he conducted in association with Professor Rutherford at McGill College, Montreal. At present he is engaged with Sir William Ramsay, K.C.B., LL.D., at University College, London, in a research on the gases produced by radium.

Commemoration Day at the University of Glasgow.

Arrangements are now practically completed for the celebration of the first commemoration day of the University of Glasgow. The date is fixed for Tuesday, April 19th, which is also graduation day. In the forenoon a Divine service will be held in the Bute Hall, which will be followed by an oration by Sir William Ramsay, of University College, London, on Joseph Black, the lecturer in the old College on chemistry from 1756 to 1766 and the enunciator of the doctrine of latent heat. There is a peculiar fitness in Sir William Ramsay delivering this oration as he himself began his brilliant career in chemistry as one of the teaching staff at Gilmorehill. At the graduation ceremony which is to follow the oration Sir William Ramsay, among others, is to receive the honorary degree of doctor of laws. In the evening a banquet is to be held in the Bute Hall, at which Sir William Ramsay will be entertained as the guest of the evening. This banquet is open to graduates and other members of the University. As there

will be a great number of applications for tickets these will be balloted for a few days before the banquet.

Closing of the Winter Session at Glasgow.

The closing of the winter session of the University, Anderson's College Medical School, and St. Mungo's College took place on March 24th. At Anderson's College the medals, prizes, and certificates were presented by Lady Primrose, who was accompanied by the Hon. the Lord Provost (Sir John Ure Primrose, Bart.), while at St. Mungo's College a similar duty was performed by Mr. Hugh Brown, president of the governors.

University of St. Andrews.

At the annual ceremonial of graduation, held on March 29th, the degree of LL.D. was conferred (*honoris causâ*) on Sir Charles Gage Brown, K.C.M.G., M.D.

March 29th.

IRELAND.

(FROM OUR OWN CORRESPONDENTS.)

Irish Poor-law Medical Service.

THE *Irish Times* has always shown itself a friend to the Irish Poor-law Medical Service and has pressed forward its claims and referred to its grievances again and again. THE LANCET has for years been in sympathy with the underpaid medical officers who take care of the poor in Ireland. The *Irish Times* of March 28th contains a leading article in which it is reiterated that so far the dispensary and workhouse medical officers have cried aloud in the wilderness without effect and that between the Local Government Board on the one hand and the local boards of guardians on the other the grievances of the Poor-law medical officers of Ireland remain unredressed. A special commissioner from the *British Medical Journal* has recently visited Ireland and in his report, after specifying the notorious grievances of this service, which have appeared in print elsewhere for years, makes the following bold and somewhat revolutionary suggestion. He advises the creation of the post of director-general of the State medical service in Ireland who would have under him four provincial inspectors-general and 20 county inspectors; that the workhouse infirmary service and the dispensary service should be amalgamated; and that the medical officer should, after a certain date, enter the service by competition. These proposals, however much their realisation might be desirable, are not, it occurs to me, likely to lead to any practical result. The Irish Medical Association has failed to obtain any redress of the grievances of the Poor-law medical officer as regards frequently inadequate salary, holiday leave, sick leave, and fixed salary or superannuation. Nobody has doubted the justice of these claims. It seems impossible to do so, but the local boards of guardians have such matters practically in their hands and much injustice results. The Local Government Board of Ireland has really done nothing for the oppressed medical officers although it is a State service and under State control. The Irish Medical Association has not succeeded in doing anything although it can influence many Members of Parliament. Unfortunately its own members seem "more Hibernico" at variance and the necessary pressure has not been exerted.

Royal Victoria Hospital, Belfast.

At the annual meeting of the friends of this charity, which was held on March 22nd, Mrs. W. J. Pirrie being in the chair, a very satisfactory report was received from the construction committee. The gross total for the building fund was £108,994 and the expenditure was £125,961, leaving a deficiency of £16,967. A portion of this was paid by Mr. and Mrs. Pirrie as the work progressed and they also gave a large sum towards the furnishing. At the last meeting of the construction committee it was found, however, that there was still a debit balance of about £11,000, which Mr. Pirrie, in the most generous way, said that he and his wife would make good. This magnificent generosity of Mr. Pirrie has relieved the construction committee from a great responsibility. A very hearty and cordial vote of thanks, on the motion of the chairman of the board of management (Mr. W. Crawford, J.P.), seconded by the President of Queen's College, and supported on behalf of the medical staff by Professor J. W. Byers, was then passed to Mr. and Mrs. Pirrie. It is to their untiring industry and unselfish devotion that there is now such a complete hospital in Belfast, so advantageous for the sick and so valuable for the clinical school. In addition to their own noble gifts (upwards of £20,000), and the trouble and the time spent in collecting £100,000 for building and £50,000 as an endowment fund, Mr. and Mrs. Pirrie have during the past seven years laboured ungrudgingly in the general furtherance of the scheme. In her speech, when moving the adoption of the annual report, Mrs. Pirrie urged the claims of the hospital for further support so that all the beds might be utilised.

Ulster Hospital for Women and Children.

At the annual meeting of the friends of this charity on March 25th it was reported that 231 children in the wards and 1859 in the out-patient department were treated, while in the women's department there were 84 intern and 373 extern cases. There were four intern maternity and 147 extern labour cases. All the debt on the hospital has been wiped out and there is a balance at the bank of £527.

Ulster Medical Society.

The seventh general meeting of this society was held in the physiological laboratory of Queen's College on March 24th, Dr. J. Campbell, the President, being in the chair. Professor T. H. Milroy gave a microscopic demonstration of Ascending Degeneration in the Spinal Cord after Section of the Posterior Sacral Roots. He also showed a Method of Demonstrating the Action of Drugs upon the Blood-pressure and upon the Volume of Organs. Dr. J. A. Milroy read a paper on Some Products of the Action of Reducing Agents upon Blood Pigment. Professor J. L. Smith read a paper on the Infectivity of Typhoid Fever. Pathological specimens were also shown by various members of the society.

Death of Mr. James Stuart, M.D. R.U.I.

Dr. James Stuart of Ballymena died from pulmonary tuberculosis on March 23rd in London, at the residence of his friend, Dr. John Simpson, in Carleton-road, Tufnell-park, N. Dr. Stuart studied at Queen's College, Belfast, and graduated as M.D. of the Queen's University in 1877. He afterwards settled in Ballymena where, by his skill, kindly nature, and extreme attention to work, he developed a very large practice. He was buried in the New Cemetery, Ballymena, in the presence of an immense number of sorrowing friends.

March 29th.

PARIS.

(FROM OUR OWN CORRESPONDENT.)

Motorists' Fractures.

AT the meeting of the Academy of Medicine which was held on March 15th M. Lucas-Championnière gave an account of fractures which are peculiar to those who deal with motor-cars. Fracture of the forearm, for instance, is particularly common. It is produced in the following way. When the handle of the starting gear is turned in the ordinary manner a "back fire" is wont to occur and so the handle is violently reversed. The main cause of this accident is that the chauffeur has omitted to retard the sparking before turning the handle of the starting gear. If the chauffeur holds the handle of the starting gear too tightly so that he has no time to disengage the pawl which connects it with the axle of the motor he may fracture his radius by tearing (*arrachement*). If, however, he holds it lightly and stops turning at the proper moment he can throw it out of gear by a simple turn of the wrist. There are also cases on record where the handle even when left to itself reverses suddenly and comes into violent contact with the arm causing a fracture by direct violence. The leg may also be fractured in the same way. As a rule the fractures in question are caused by *arrachement*, but some are due to direct violence. M. Lucas-Championnière has studied with great care the mechanism of these fractures. According to him the *arrachement* is due to the sudden reversal of the wrist and a violent strain on the ligaments connecting the hand with the lower end of the radius. All these fractures heal well under gentle movement and massage. The paper was illustrated by three radicgraphs.

Honours to Professor Cornil.

The friends and pupils of Professor Cornil have taken the triple occasion of his resignation as physician to the hospitals, of his scientific jubilee, and of his promotion to the

rank of officer in the Legion of Honour to give him a gold medal designed and executed by the sculptor, M. Pillet. The medal bears a head of Professor Cornil on the obverse and on the reverse the graceful figure of a woman as symbolising science, while in the background appears the elevation of the Hôtel Dieu. The 200 subscribers to the medal met for a banquet at the Grand Hotel on March 8th, Professor Debove, Dean of the Faculty of Medicine, being in the chair. One after another the President and such well-known men of science as Franck-Chauveau, Bar, Berger, Blondel, Chaumat, Léon-Labbé, and others spoke in honour of their master whose reply was couched in words at once dignified and touching in their simplicity. There is no need to give a detailed description of Professor Cornil's work to the readers of THE LANCET. All the world knows that to him is due the renaissance in France of pathological histology. Thanks to him this branch of science has become one of the glories of French medicine. Professor Cornil it was, too, who organised and handed over to his pupil Professor Chantemesse the principal French bacteriological laboratory, exclusive of the Pasteur Institute. In collaboration with M. Ranvier he has written many excellent treatises on medicine and during the 20 years that he has sat in the Senate he has been the cause of the passing of the most important Acts dealing with hygiene, the Assistance Publique, and higher education.

The National Periodic Congress of Gynæcology, Obstetrics, and Pediatrics.

The fourth session of the above-named congress will meet at Rouen from April 5th to 10th. The president is M. Richelot, *agrégé* professor at the faculty, surgeon to the Paris hospitals, and member of the Academy of Medicine. M. Richelot will also be president of the gynæcological section, while the section of obstetrics will be presided over by M. Guillemet, professor in the Nantes School of Medicine, and that of pediatrics by M. Kirmisson, member of the Academy of Medicine. Nine chief subjects are put down for discussion. Any medical man, Government or other official (*administrateur*), philanthropist, student in medicine, or midwife may attend the congress. Names and subscriptions should be sent to Dr. Albert Martin, professor at the Rouen School of Medicine.

A New Professor.

Dr. Paul Reclus, an *agrégé* professor, surgeon to the hospitals, and member of the Academy of Medicine, has just been appointed to the chair of operative surgery and surgical apparatus. Dr. Reclus, who was born in 1847, was *externe* to the Paris hospitals in 1868; in 1871 he won a medal and was appointed *interne*. In 1875 he won the gold medal and in 1876 was appointed anatomical assistant at the faculty and took his doctor's degree. He won the silver medal for his thesis. In 1877 he was appointed prosector, in 1879 surgeon to the hospitals, coming out first among the competitors, and in 1880 he was made *agrégé*. He was laureate of the academy in 1878 and in 1882 won the Godard prize at the institute for his work on syphilis of the testicle. In 1895 he was elected a member of the Academy of Medicine. Among the many lectures which he has delivered are the free course in clinical surgery delivered at the Broussais, the Pitié, and the Laennec Hospitals, to the last of which he is attached. He has published many important books and papers and his name will be always connected with cystic disease of the breast and with an operation for the establishment of an artificial anus in the iliac region.

False Reports as to a Typhoid Fever Epidemic in Paris.

The political journals have begun a campaign against the water-supply of Paris which is apparently inspired by the personal feeling of certain prominent hygienists against the Director of Public Hygiene and also by some financiers who wish to influence public opinion and the Government in favour of a scheme for supplying Paris with water from the Swiss lakes. So, at least, says the rumour, and I give it without assuming any responsibility for it. Its existence, however, will explain the evident desire to produce a panic. As a matter of fact, the number of cases of typhoid fever in Paris is barely above the normal for this season of the year. Last year the number was 11 per 100 000, while this year the proportion is 14. The total number of cases at present under treatment is 300. 20 years ago the proportion of typhoid fever cases was 123 per 100,000.

March 29th.

BERLIN.

(FROM OUR OWN CORRESPONDENT.)

Defective School Children.

SOME years ago the Berlin school authorities arranged that children who were found to be in some degree defective, though not unable to attend school, should receive instruction in special classes in connexion with the municipal schools. All children are regularly examined by the medical officers of the schools and in accordance with their advice the defective ones are selected for the special classes. Up to the present time 1300 children have been removed from the ordinary classes, being 0·6 per cent. of all the pupils of the Berlin municipal schools. According to statistical returns 1 per cent. of the children in Germany are defective, so that there probably are still about 0·4 per cent. in Berlin whose abnormal condition has not been recognised on examination. According to a paper read by Dr. Nauratzky before the Berlin Society for School Hygiene the parents as well as the teachers often fail to realise a child's condition, mistakes attributed to laziness or to stupidity being often in reality a symptom of defective intelligence. As to the causes of the defective state in question Dr. Nauratzky found that in about 60 per cent. it was due to heredity, especially to alcoholism on the part of the father or mother. In about 30 per cent. the social condition of the child's family had an influence; among the very poor habitual insufficiency of food interfered with the normal function of the brain. The third group included children who had suffered from some exhausting illness before the third year of life. The first group of children was always, and the third group was nearly always, incurable, whilst in the second group the mental functions might return to the normal standard if the child was well fed and well cared for. Symptoms of mental defect which ought to be recognised by the teachers were partly intellectual, such as bad memory and slowness of comprehension, and were partly moral. Children who neither by punishment nor by persuasion can be deterred from habitual untruthfulness, from playing truant, and from infractions of school discipline must always be suspected of mental defect.

Medical Qualifications in Germany.

According to the official gazette (*Reichsanzeiger*) 1562 medical men became legally qualified during the year 1903—a number considerably greater than during either of the two preceding years, in each of which respectively the numbers that passed the State examination were 1432 and 1344. The highest number ever attained was in 1891, when 1570 candidates passed—only eight more than became qualified in 1903. Owing to the overcrowding of the profession it is some consolation to learn that the number of medical students shows a regular though slight decrease during the last few years. The number of dental qualifications in 1903 was 162, as in the preceding year.

The Antivaccination Movement.

The antivaccination movement is as strong in Germany as in England, although the law with respect to compulsory vaccination is much stricter in the former country. A journal which denounces vaccination recently asserted that in defiance of the law the children belonging to the Imperial family had never been vaccinated. In order to ascertain whether this rumour had any foundation the *Zeitschrift für Ärztliche Fortbildung* applied to Dr. von Leuthold, the Emperor's physician-in-ordinary, who in reply wrote that he was authorised by His Majesty to send the editor a copy of the vaccination certificate signed by Dr. Zunker, the physician of the Imperial family, where the successful vaccination and revaccination of His Majesty's children are certified in accordance with the law.

March 29th.

QUEEN CHARLOTTE'S HOSPITAL.—A grand morning concert in aid of Queen Charlotte's Hospital, Marylebone-road, of which Her Majesty Queen Alexandra is patron and the Princess of Wales is vice-patron, will take place at the Queen's Hall, Langham-place, London, W., on Thursday, May 5th, at 3 o'clock. Madame Melba, who has kindly consented to sing on this occasion, is arranging the programme. Tickets, £1 1*s*., 10*s*. 6*d*., and 5*s*., may be obtained from the Social Bureau, 30, New Bond-street, London, W., and from the secretary of the hospital.

Obituary.

DEPUTY SURGEON-GENERAL HENRY CAYLEY, C.M.G., F.R.C.S. ENG., I.M.S., A.K.C., HONORARY SURGEON TO THE KING.

THE announcement of the death of Deputy Surgeon-General Cayley in last week's papers came as a shock to most of those who were included in his large circle of friends, for it was most unexpected even by many of those who knew him best. Of a spare build, addicted to the joys of the saddle, shooting, and golf, and to most field sports, he led a temperate life which might have been expected to be prolonged for many years. His fatal illness is reported to have been the result of a fall from his horse while on active service in South Africa, on the occasion of which he fractured several ribs and received other injuries. He passed away at Leavesden, Weybridge—to which beautiful neighbourhood he retired on vacating his appointment at Netley—on March 19th in the seventieth year of his age. He was buried at Weybridge cemetery on March 23rd.

Henry Cayley was a scion of the old family of Cayley which was settled at Owby in the thirteenth century, a member of which subsequently purchased the estate of Brompton in Yorkshire and there resided in early Stuart times. His ancestor, Sir William Cayley of Brompton, was knighted by Charles I. and was created a baronet by Charles II. soon after the Restoration as a reward for services and loyalty during the Civil Wars. From this Sir William Cayley the subject of this memoir was but fourth in descent, a rare example of five generations extending over a period of 300 years and one which is mainly accounted for by the late periods in life at which his progenitors entered the bonds of matrimony. Henry Cayley was one of a large family; of his six brothers, the third, Sir Richard Cayley, is an ex-Chief Justice of Ceylon, while the fifth, Dr. William Cayley, is well known as the accomplished physician who has been so many years connected with the Middlesex Hospital.

Henry Cayley was born on Dec. 20th, 1834, and was the fourth son of the late Edward Cayley, J.P., and Frances, a daughter of the Rev. Richard Twopeny, M.A., rector of Little Casterton in Rutlandshire. At an early age he entered the medical school of King's College Hospital where he proved to be a painstaking and methodical student. At the end of his curriculum, towards the close of the year 1855, when just 21 years of age, he was enrolled as a Member of the Royal College of Surgeons of England. He entered the Bengal army as an assistant surgeon shortly before the Indian Mutiny, served through it, and received the medal when the hostilities were brought to a successful termination. His bent was, however, rather towards the civil than the military side of the great service of which he was a member and, an opportunity occurring, use was made of his special knowledge of diseases of the eye to appoint him to the chair of ophthalmic surgery in the Calcutta Medical College. This appointment he held for many years; the position brought him a large and ever-increasing special practice and great practical knowledge. His skill in the extraction of cataracts and in other operations connected with the eye is still remembered in Calcutta, where his influence in the medical school was great. He was duly elected to a Fellowship of the University of Calcutta. He became a Fellow of the Royal College of Surgeons of England in 1886 and, a year later, on April 29th, 1857, he retired from the Bengal army with the rank of deputy surgeon-general and after a service which extended over a period of more than 30 years. Soon after his return to this country he settled down at Elm Grove, Watford. It was at about this time that he was appointed a member of the Medical Board at the India Office, of which Sir Joseph Fayrer was then the President, but before he finished the usual term of membership, owing to the unexpected death of Dr. D. B. Smith (1889) a vacancy occurred in the Army Medical School at Netley. The professorship of military and tropical medicine was rendered vacant; it was offered to Cayley and was accepted by him. At Netley Cayley had a difficult position to fill: his lectures were rather severely criticised. He practically succeeded to the chair of Surgeon-General Maclean (for Dr. Smith's tenure of the post had been but a short one), whose flow of language and wonderful descriptive power had brought the diseases of the tropics vividly before the young officers in a way that will never be forgotten and is a treasured memory to many. Cayley, although a teacher of considerable experience in India, was not gifted with a good delivery or with any pleasing flow of language, and these circumstances, taken with his rather diminutive stature, quiet, almost shy, manner, and rather low intonation, caused at first a want of appreciation. It was, however, soon found that his lectures were prepared in a most careful and conscientious manner. In respect to his previous opportunities as a teacher it was no fault of his that he was placed in a difficult position at Netley, but it was the fault of a system which could convert, by a touch of the pen, an ex-professor of ophthalmology into a professor of medicine. It is certain that he strove to make himself the master of all modern methods of diagnosis and he followed Dr. Smith's example of spending a considerable period each day in the wards of the hospital and aiding the young officers in the diagnosis and treatment of their cases. In him his colleagues found a loyal supporter on all questions which concerned the well-being of the school and as a member of the senate he did all he could to strengthen the position of the executive. His quiet, sympathetic manner with the suffering, his straightforwardness, his true kindness of heart, and his consideration for others will ever form a bright example and will be remembered by those who were at any time his colleagues.

After holding the professorship for about seven years and on reaching the age limit Cayley finally retired and it was thought that his connexion with the army was closed. He settled at Cherrahurst, Weybridge, where he continued his active outdoor life. When he retired from India in 1887 he brought back to this country a settled habit of early rising which we believe he never relaxed. While at Netley it was a common thing to meet him in the neighbourhood taking a canter soon after dawn or to find him returning after an early swim. He was a warm advocate of yachting both as a source of pleasure and as a means of restoring health and we doubt if any other member of the Royal Southern Yacht Club derived greater satisfaction from this pursuit than did Henry Cayley, although his boat was only a tiny craft. His retirement from Netley, however, was not destined to mean the last of his public services. The South African war was being waged, there rang through England a note which told of the need of more hospitals and officers to administer them; he heard the call of duty and responded, though he had nearly completed his sixty-fifth year. He offered his services to the War Office and was chosen to proceed to the front as the senior officer of the Scottish National Red Cross Hospital, with the rank and title of colonel. In South Africa he did most excellent service, never sparing himself, while his tact and kindly manner helped to make the paths easy for those who had actually to minister to the sick and wounded. He was mentioned in despatches and at the end of the war he returned to this country in the best of health and spirits. He received as his outward reward the South African and the Queen's medals and the decoration of the third class of the Order of St. Michael and St. George. But there was another and a higher reward which came to him and which, though unspoken, was accorded to him by his friends; it arose from the fact that when advanced in years, in a time of trouble, he had given up luxury and ease to undergo certain hardship and great danger. More recently he was gazetted "Honorary Surgeon to the King." On his return he again settled at Weybridge where he purchased the home in which he passed his last days.

He married on July 10th, 1862, Letitia Mary, daughter of the Rev. Nicholas Walters, and by her had a family of six sons and two daughters. Three of his sons are serving His Majesty—two in the army and one in the navy. The second son, Dr. Cyril Henry Cayley, is now divisional health officer of the city of Bombay. Of his two daughters, the elder is married to Mr. Charles MacLeod, a Calcutta merchant, and the younger to Lieutenant-Colonel H. R. Whitehead, F.R.C.S. Eng., R.A.M.C., who is now in medical charge of the Herbert Hospital at Woolwich. To his widow and to his family we tender our sincere sympathy. We knew something of the man and what he was in his home. To the younger generation he was not only the father but also the companion and friend.

GEORGE RIGDEN, M.R.C.S. ENG., L.S.A.

Mr. George Rigden, who died at his residence in St. George's-place, Canterbury, on March 21st, was one of the oldest inhabitants of the cathedral city and a veritable link with the past. His last illness was of only

a few days' duration, although his health had been failing for a considerable time and he had been confined to the house for several months. Mr. Rigden was born at Wingham, in Kent, on Dec. 30th, 1815, so that at his death he was in his eighty-ninth year. His school education was received at Sandwich and Ramsgate and his medical training was obtained at University College, London, where he obtained a silver medal. In 1837 he became qualified as L.S.A. and was admitted a Member of the Royal College of Surgeons of England in 1844. In 1837 he did temporary duty at the Canterbury Dispensary, to which he was shortly afterwards appointed surgeon and secretary, capacities in which he acted until 1900. He took much interest in questions relating to public health and was one of the pioneer contributors to the literature of the subject, his personal observations being published in his "Report on the Sanitary Condition of Canterbury" and "Vital Statistics of Canterbury." As a practitioner Mr. Rigden was perhaps best known as an accoucheur; he was at an early period of his career convinced of the utility of anæsthetics in midwifery cases; he was also a strong advocate of the forceps and even applied them on one occasion when he was over 80 years of age. In 1881 he published in the Transactions of the Obstetrical Society a "Statistical Report of 5682 consecutive Cases of Midwifery occurring in Private Practice." During 1891-92 he was president of the South-Eastern branch of the British Medical Association. As a memorial of his having practised in Canterbury for 50 years he presented to the city a drinking fountain which stands at the corner of Station-road, St. Dunstan's. Mr. Rigden married in 1842 and had a numerous family. His wife survives him and their "diamond wedding" was celebrated two years ago; their four sons are all in the medical profession. The funeral took place on March 24th and was attended by a large number of persons, including practically all the medical men of the city.

Medical News.

VICTORIA UNIVERSITY OF MANCHESTER.—At examinations held in the Faculty of Medicine in March the following candidates were successful:—

FINAL EXAMINATION.

Part I.—Francisco da Cunha and H. S. Dixon, Owens; John Dixon, R. G. Dixon, and Harold Fearnley, Yorkshire; R. L. Ferguson, Owens; Alfred Gough and H. S. Harling, Yorkshire; Robert Haslam, Owens; W. B. Hill, J. J. Hummel, and A. J. Landman, Yorkshire; G. C. Mort, Owens; C. N. Smith, Yorkshire; Harold Spurway, and Douglas Wardleworth, Owens; and Frederick Whalley and F. W. B. Young, Yorkshire.

Part II.—P. W. Ashmore, Yorkshire; John Battersby and J. W. Hartley, Owens; F. W. Hayes and S. L. Heald, Yorkshire; W. G. Kinton, W. Y. Martin, Stuart Murray, and S. H. Ryan, Owens; and Bertram Suggitt, Yorkshire.

CONJOINT EXAMINATIONS IN IRELAND BY THE ROYAL COLLEGE OF PHYSICIANS AND THE ROYAL COLLEGE OF SURGEONS.—The following candidates have passed the preliminary examination:—

F. N. Allman, J. J. Blake, F. Cassidy, D. F. Curran, H. P. Hensy, A. Humphreys, W. S. Johnston, A. R. Mallet, J. Moynihan, J. T. O'Boyle, M. C. O'Hara, F. E. Preston, B. Reilly, S. Robinson, Israel Scher, G. C. Soeyd, R. H. F. Taaffe, M. Tobin, B. Wallace, J. F. Williamson, and R. A. Wright.

DONATIONS AND BEQUESTS.—The Prince of Wales has sent a donation of £50 to the Dorset County Hospital.

A vaccination grant has been awarded by the Local Government Board to Mr. S. H. Rentzsch, Week St. Mary, for the third time in succession.

DEATH OF A CENTENARIAN.—Mrs. M. Bishop, who died at Crediton recently, was 103 years old.

THE DEVONSHIRE HOSPITAL.—The report of the committee of management of the Devonshire Hospital and Buxton Bath Charity for the year 1903 states that 2916 in-patients have been admitted during the year, being 247 less than in the previous year. The number of out patients admitted was 209. The average number of patients daily in the hospital was 192·5. The average cost per week of each in-patient has been 15*s.* 9½*d.* In connexion with this charity there is a Samaritan fund for the purpose of helping needy patients to return to their homes. The hospital, which commenced its beneficent work in the year 1859, has, since its inception, cured or relieved nearly 76,000 patients and the constantly widening sphere of its usefulness entails a heavy expenditure.

A MEDICAL CRICKETER.—Mr. E. M. Grace, M.R.C.S. Eng., L.R.C.P. Edin., the secretary of the Gloucestershire County Cricket Club, is in his sixty-third year. He has made 72,217 runs and taken 10,815 wickets during his cricket career and will doubtless increase these totals considerably during the coming season.

THE LATE MR. J. P. RICHARDS.—Mr. Joseph Peeke Richards, who died at his residence, 6 Freeland-road, Ealing, on March 22nd, in his sixty-fourth year, was a native of Plymouth. He received his medical education at King's College, London, and became qualified as M.R.C.S. Eng. and L.S.A. in 1863. He entered on lunacy practice as assistant medical officer at the Devon County Lunatic Asylum and was subsequently appointed medical superintendent of the female department of the London County Asylum at Hanwell.

ROYAL COLLEGE OF SURGEONS IN IRELAND.—The following candidates having passed the necessary examination have been admitted Fellows of the College: Mr. J. H. Barrs, L.S.A. Lond. (Burton-on-Trent), and Mr. W. F. Law, M.B., B.Ch. Dub. (British Guiana).—At a meeting of the President, vice-president, and council, held on March 24th the following motion was passed unanimously:—

That the President, vice-president, and council express their gratification at the appointment, for the first time, of a medical man to the office of provost of Trinity College and congratulate Dr. Anthony Traill on his appointment to that distinguished position.

ST. BARTHOLOMEW'S HOSPITAL.—The following donations have been received by the treasurer of St. Bartholomew's Hospital towards the building fund:—The Union of London and Smiths Bank (Limited), £210; Stafford Northcote and Co. (Limited), £26 5*s.*; Dr. Clement Godson, £52 10*s.*; National Provincial Bank of England (Limited), £105; London and Westminster Bank (Limited), £210; the Capital and Counties Bank (Limited), £105; Mr. R. C. Ackland, £25; and London and County Banking Company (Limited), £105. Mr. John Tann of 11, Newgate-street, E.C., has given a steel chest and three wrought steel collecting boxes to be placed at the entrances to the hospital.

VISITING PHYSICIANS AT POOR-LAW INSTITUTIONS.—At a recent meeting of the Bristol board of guardians a suggestion was made by several of the members that the gratuitous services of visiting physicians might be obtained. The general purposes committee, however, reported at the meeting of the guardians held on March 25th to the effect that such an arrangement could not be made without remuneration being provided and it recommended that the subject should be deferred for the present. The report was adopted, one of the guardians remarking that physicians were ready to give their services to any charitable institution but a Poor-law establishment was not a charitable institution in the sense that a hospital was.

UNIVERSITY OF OXFORD.—NOTICE OF THE EXAMINATION IN PREVENTIVE MEDICINE AND PUBLIC HEALTH, MICHAELMAS TERM, 1904 (D.P.H. EXAMINATION).—The examination for the diploma in Public Health will commence on Tuesday, Nov. 22nd, at 10 A.M., in the schools. The examination is in two parts, conducted partly in writing, partly *viva voce*, and in each subject partly practical. The first part comprises the application of chemistry and physics to general hygiene. The second part comprises the following subjects: general pathology, with special relation to infectious diseases; the laws relating to public health; sanitary engineering; and vital statistics. Both parts may be taken together at the same examination or they may be taken at separate examinations, but no one is deemed to have satisfied the examiners in Part 2 unless he has satisfied the examiners in the subjects of Part 1. The fee for admission to each part is £5. A diploma is issued to every candidate who has passed in both parts of the examination but no diploma or certificate is given in any other circumstances. Candidates (who are not necessarily members of the University) must have their names on the Medical Register and must have satisfied all the rules of the General Medical Council of the United

Kingdom relating to the admission of candidates for diplomas in Public Health which are in force at the time. Candidates must send in their names by letter to the secretary to the Boards of Faculties at his office in the Clarendon-buildings, Broad-street, Oxford, not later than 10.30 A.M. on Tuesday, Nov. 8th, at the same time inclosing the statutable fee and full evidence of having satisfied the above requirements.

BRISTOL ROYAL INFIRMARY.—The annual meeting of the governors of the Bristol Royal Infirmary was held on March 22nd, under the presidency of Sir Charles Cave. The medical report stated that the in-patients numbered 3293, compared with 3281 in 1902. There were 44,263 out-patients treated, as against 41,761 in the previous year. The financial statement showed that the total ordinary income of the institution was £11,041 and the total ordinary expenditure was £16,451. The total adverse balance of the infirmary is now nearly £16,000. A new casualty department and lift, costing about £4000, are urgently needed; the committee therefore proposes to ask the public for a sum of not less than £20,000 and confidently expects that the citizens of Bristol will readily respond.

ROYAL LONDON OPHTHALMIC HOSPITAL.—Owing to the death of H.R.H. the Duke of Cambridge, patron of the Royal London Ophthalmic Hospital (Moorfields) and president at the last dinner held in aid of the funds of the institution, the centenary festival dinner in aid of the funds of the hospital, arranged for Friday, April 22nd, has been postponed to Tuesday, May 10th. The dinner will take place in the Grand Hall of the Hotel Cecil and Sir Charles Wyndham has kindly consented to preside on this occasion and to enable him to do so he is generously closing his theatre on that night. The arrangements for the dinner are in the hands of the Social Bureau, 30, New Bond-street, London, W., where all information may be obtained.

ROYAL COLLEGE OF SURGEONS OF EDINBURGH.—At a meeting of the College held on March 24th the following gentlemen, having passed the necessary examinations, were admitted Fellows of the College:—John Evans Hadden Bennett, M.B., C.M., County Cork; Arthur William Stark Christie, M.B., Ch.B. Edin., Edinburgh; Owen Gilmore, L.R.C.S. Edin., Edinburgh; Harold Edgar Atheling Jackson, M.R.C.S. Eng., L.R.C.P. Lond., Victoria, Australia; Alfred Dudley Eskell Kennard, M.R.C.S. Eng., L.R.C.P. Lond., Hampton Wick, Middlesex; William Lloyd, L.R.C.S. Edin., London; Maitland Bodley Scott, M.R.C.S. Eng., L.R.C.P. Lond., Bournemouth; Harry Moss Traquair, M.D., C.M. Edin., Edinburgh; and Daniel John Cunningham, D.C.L., LL.D., M.D., D.Sc., professor of anatomy in the University of Edinburgh, was also elected a Fellow of the College without examination. The medal and set of books forming the Bathgate memorial prize, presented to the College by Colonel William Lorimer Bathgate in memory of his late father William McPhune Bathgate, Fellow of the College, was awarded to Miss Helen Meldrum McMillan for the highest marks obtained in competitive examination in materia medica and therapeutics.

Parliamentary Intelligence.

HOUSE OF COMMONS.

WEDNESDAY, MARCH 23RD.

Atmosphere of the Underground Railway.

MR. WEIR asked the President of the Board of Trade whether, having regard to the fact that the atmosphere in the Metropolitan Extension Railway between 8 P.M. and midnight was specially foul through being surcharged with smoke emanating from coal of a highly bituminous character, he would represent to the company the desirability of using coal of a smokeless nature.—MR. GERALD BALFOUR replied: I have communicated with the railway company on the subject and in reply they inform me that on the extension line from Baker-street, as well as on the Inner Circle railway, the best hard Welsh smokeless coal is always used and that inspectors are employed to see that the engine-drivers fire in a proper manner. It is added that the railway from Baker-street through the tunnel is to be worked by electricity at an early date.

The Plague at Johannesburg.

SIR WALTER FOSTER asked the Secretary of State for the Colonies whether he had any official report as to an outbreak of plague in the coolie location at Johannesburg, and if so whether he would state the number of cases and the number of deaths up to March 19th among the coolies, Kaffirs, and whites.—MR. LYTTELTON replied: The latest telegrams from Lord Milner on this subject are as follows. March 20th. No. 1. Bubonic plague has broken out in the coolie location here. It is a virulent outbreak, 30 deaths having occurred out of 38 cases within a few days. Though the nature of the disease was only recognised yesterday steps have been already taken to remove all patients to a special camp to the north of the town. Owing to the fact that the possibility of outbreak has been foreseen for some time the site of the camp was already chosen and necessary arrangements made, while tents are ready and will be erected immediately. There will be thus no difficulty about isolation and proper treatment of all suspect cases. Outbreak confined to coolie location which forms part of insanitary area recently expropriated by municipality. Town council is thus in position to clear the location at once, to transfer the coolies to a new site outside the town, and to disinfect the whole space. It has all necessary legislative powers and administrative arrangements have as far as possible anticipated the need which has arisen. There is thus every reason to hope spread of disease may be promptly checked. Mining area so far quite unaffected. March 22nd. No. 2. Your telegrams of March 21st, No. 2 and No. 3. Present position of plague is as follows: suspected cases reported, 47 coloured, six white; deaths, 40 coloured, two white. Outbreak appears to be well in hand and I do not think it necessary to engage services of Professor Simpson, especially as I have a first-rate bacteriologist and excellent medical staff on the spot and the public here have complete confidence in them.

THURSDAY, MARCH 24TH.

Further Particulars about Plague.

The second reading of the Consolidated Fund Bill afforded a convenient opportunity for raising a discussion on the circumstances connected with the outbreak of the plague at Johannesburg.—SIR WALTER FOSTER asked for information. Had the disease been brought into the city by the imported Asiatic labourers? It appeared to have broken out in an Indian location and, of course, it was known that Indians were specially liable to the malady. A suspicious circumstance in connexion with the matter was that there had been a heavy rate of mortality among the people working in the mines and this had been said to be due to a form of pneumonia following on after influenza. As the plague itself was pneumonic he was not without his suspicions that the mortality among the mine workers might have been due to a disguised form of the plague which had been present in the locations for some time. At all events, the point was worth looking into in order to prevent any future possibility of the disease in its milder form being overlooked. What was the source from which the plague had been introduced? There were several possibilities. It might have been brought by recruited Indian labour or by foods imported from India or China. Plague was often carried by animals, fowls, pigs, dogs, and cats—which for weeks after their infection presented no suspicious symptoms. Rats, the commoner carriers of plague, were affected much sooner.—Dr. HUTCHINSON urged that each Chinese coolie should be medically examined before entering the compound and that the site of the compound should be chosen by a thoroughly qualified man.—MR. LYTTELTON, in his reply, said that he personally and the Government were much indebted to the two high authorities on medical matters who had just addressed the House. As to the fear that the introduction of Chinese labour might be attended with danger at present he could give the assurance that a medical officer would examine each coolie in China before he was embarked and that a surgeon-superintendent would accompany each ship with the absolute duty of looking after the health of all the coolies on board. Vaccination would take place and again in South Africa another health examination would be made, so that so far as human precaution could secure it the coolies would be medically fit. The honourable Member (Sir Walter Foster) was aware that the sources of this bubonic plague were still a matter of scientific obscurity. He agreed with what had been said about its transmission by animals. That much, he understood, had been ascertained, but if they were to compare, for instance, the sources of malaria with the sources of bubonic plague they would find that whereas science had made great advances in the ascertainment of the sources of malaria it had not reached nearly so satisfactory a point with regard to the sources of bubonic plague. The suggestion that every precaution should be taken for knowing beforehand the precise spot they would choose for isolation in case of an outbreak of bubonic plague was a most eminently reasonable one and he could hardly believe that the medical advisers in the Transvaal would not readily fall in with it. In fact, he thought it would be admitted that the circumstances with regard to the present outbreak showed not merely that every foresight and vigilance were exercised but the actual measures had been taken and a site actually chosen to guard against the possibility of an outbreak.—SIR WALTER FOSTER interrupted to ask why an outbreak had been anticipated.—MR. LYTTELTON said he could not bind himself to accuracy on that point. He had no exact information but he believed that what had happened was this. It had been for some time a complaint in Johannesburg that the drainage system was deplorably bad, that insanitary areas existed, and one of the deplorable features of the shortage of labour was that the Johannesburg municipality had actually been unable to carry out the sanitary reforms which they had promoted. There was, therefore, a condemned area in Johannesburg. It was inhabited, not necessarily by Indian coolies, but by Indian traders and other Indian inhabitants. These were not recent importations; a good many Indians were resident in Johannesburg in President Kruger's time. Evidently one of the areas which they inhabited became insanitary and was condemned, but the measures which would have been taken to clear out the area had only labour existed became impossible. No doubt Lord Milner and the authorities of the Johannesburg municipality, seeing that these areas had been condemned, very likely foresaw that some epidemic might occur, and although it was very deplorable that the areas could not have been cleared it probably would have been more deplorable to have turned the Asiatics out into the streets in the cold nights. Let him say this—that with regard to the introduction of Chinese any man would be mad to introduce Chinese into a place where plague existed or at any rate where plague was not most scrupulously isolated and where he had not obtained medical advice of the highest eminence that it was safe to introduce such labour. He thought, without taking upon himself any of the functions of the medical profession, he might say that no such introduction would be contemplated for a moment by

the authorities of the Transvaal unless they were advised on medical advice that such a proceeding was unattended with risk.

Vaccination Exemptions.

Mr. WEIR asked the President of the Local Government Board how many certificates of exemption from vaccination were granted during the year ended Dec. 31st, 1903.—Mr. LONG replied: The returns made to me show the number of certificates of conscientious objections received by the vaccination officers during each year, and this number may be taken as substantially agreeing with the number granted during the year. The returns for 1903 are not quite complete, but the number of certificates of the kind referred to received during the year may be stated approximately as 37,200.

Dentistry in East Africa.

Mr. CATHCART WASON asked the Under Secretary for Foreign Affairs whether he was aware that throughout the Protectorates of East Africa and Uganda there was no qualified practising dentist, and whether he would consider the desirability of offering a free passage there to a suitable practitioner.—Earl PERCY replied: I am not aware that there are any private practitioners in the Protectorates but I understand that a dentist recently visited them and there is at least one member of the medical staff who has a practical knowledge of dentistry. We have received no complaints or suggestions on the subject from His Majesty's Commissioners.

Politics in an Asylum.

Mr. SLOAN asked the Chief Secretary to the Lord Lieutenant of Ireland whether he was aware that at a meeting of the governors of the Cork Lunatic Asylum, held on March 7th, a resolution was passed condemning the crown in the centre of the badge worn on the caps of the attendants and deciding to discontinue its use in future on the grounds that it was a party badge and repulsive to the feelings of the attendants; and, if so, whether he would say if such resolution had the sanction of the Irish Government.—Mr. WYNDHAM replied: I am informed that a resolution of the character mentioned was passed at a meeting of the asylum committee on March 8th after a number of members had left. The resolution does not require the sanction of the Government.

Vivisection.

Sir JOHN ROLLESTON asked the Secretary of State for the Home Department whether, in view of the 14,906 experiments upon living animals in 1902, he could obtain from the institutions or persons to whom certificates were granted, a statement of the practical results in scientific knowledge or in the improvement of medical treatment which could be traced to those experiments.—Mr AKERS-DOUGLAS replied: Certificates are not granted under the Cruelty to Animals Act, 1876, to institutions. Persons holding certificates under the Act publish in considerable numbers in books, journals, and the proceedings of learned societies reports of the experiments performed by them. I think that these reports enable those who are interested and qualified to judge as to the results which the experiments have yielded or are likely to yield in the advancement of scientific knowledge or the improvement of medical treatment. I may point out that by far the most of the experiments quoted in the question are inoculations, many of which are performed either for diagnosis or in connexion with the preparation and standardising of drugs and curative sera, of which the practical utility is well known.

FRIDAY, MARCH 25TH.

Sir Charles Dilke's Shops Bill.

Sir CHARLES DILKE moved the second reading of his Shops Bill. He explained how this proposed legislation stood. The committee of the House of Lords decided unanimously that the hours in shops could be greatly and safely reduced by legislation and reported also that the shopkeepers, quite as much as the assistants, now urgently desired legislation. Last year the House of Commons unanimously passed a resolution calling for action in this respect. He should now, however, be prepared to withdraw his Bill if the Government promised a Bill of its own containing a pure local option clause and if that clause were wide enough to cover the limitation of the hours of shop assistants. What he wanted was a Bill unhampered by the restrictions put into Lord Avebury's Bill of last year. The Bill which he now submitted would fix the hours of shop assistants as the hours of labour in factories were now fixed by the Factory Acts. Without such a provision he contended there would be the grossest evasion of the law. The second reading was opposed by Sir F. POWELL and Sir F. BANBURY and the latter "talked out" the Bill.

MONDAY, MARCH 28TH.

Exemptions from Vaccination.

Mr. CORRIE GRANT asked the President of the Local Government Board how many certificates of exemption from vaccination had been granted since the Act of 1898 came into force up to the present time (or up to the date of the latest return), and whether any of the children so exempted, and, if so, how many, had been attacked by small-pox; and whether any, and, if so, how many, had died from that disease.—Mr. LONG said: The returns as to the number of certificates of conscientious objection to vaccination received by the vaccination officers in the year 1903 are not quite complete, but the total number received since the passing of the Vaccination Act, 1898, may be taken as approximately 387,000. By far the largest number were given between the passing of the Act and the end of the year 1898—viz., 203,413. This was due to the fact that certificates could be obtained during the four months after the passing of the Act in respect of all children born prior to that date, whilst in respect of children born after that date the certificate must be obtained within four months from the birth of the child. I have no means of ascertaining how many of the exempted children have been attacked by small-pox, but several such cases have been reported to me.

Physical Condition of Children.

On the third reading of the Consolidated Fund Bill Sir JOHN GORST and several other Members drew attention to the physical condition of children.—Sir WILLIAM ANSON, in reply, explained what had been done by the committee of inquiry appointed last year. That committee was appointed with the view of ascertaining whether a Royal Commission should not be appointed to inquire into the general question of physical deterioration. The Board of Education felt it was largely interested in the matter and it was represented on the committee. The reference implied the duty of ascertaining what steps should be taken to furnish the Government with a periodical set of facts as to the physical condition of the people and to try to indicate the causes of the deterioration and to point out the means by which it might be improved. The committee began to sit in the winter and it found that the British Association had appointed a committee, of which Professor Cunningham was chairman, to inquire into the same subject. The committee put itself in communication with the committee of the British Association which met it in a most cordial spirit. Professor Cunningham gave evidence and the scheme already outlined by the British Association committee was sent to the Royal College of Physicians of London and the Royal College of Surgeons of England. The Royal College of Surgeons had sent back word that it cordially approved of the proposed scheme that there should be a regular survey of the population of the United Kingdom, of the agricultural and working population, and of the children in the schools, and that means should be taken to ascertain their physical condition at school age. It was hoped that by proper management it might be possible to cover the whole of the United Kingdom in ten years so that there might be a complete survey of the United Kingdom in the course of every ten years. This committee had gone into the question of the life of the child from infancy up to school age and during the period of adolescence. It had gone very fully into the question of the nutrition of the children and on these points members of the medical profession had given most valuable evidence. He hoped the committee would report at no distant date and then they would be in possession of the facts as to the physical condition of the children and they would have what the committee conceived to be the causes of the evil and their suggested remedy. He wished the House to understand that the inquiries being made were of a most practical character and that the committee was going into the actual causes of the physical ailments and physical shortcomings of the children at school and before they went to school.

TUESDAY, MARCH 29TH.

Royal Commission on Feeble-Minded Persons.

Mr. CHARLES HOBHOUSE asked the First Lord of the Treasury whether he could now make any statement as to the course which the Government intended to adopt in respect of an inquiry into the case of feeble-minded persons.—Mr. BALFOUR replied: The matter is being considered, but the reference to the Royal Commission has not yet been determined.

The Plague.

Sir WALTER FOSTER asked the Secretary of State for the Colonies to give the most recent official information that he had received respecting the outbreak of plague at Johannesburg and what steps were being taken to destroy rats at Port Elizabeth and other ports, especially in ships arriving from infected ports.—Mr. LYTTELTON replied: I have no more recent official information than that which I have published, but I have asked Lord Milner to furnish a weekly return of cases and deaths during the outbreak. Steps are being taken at the British ports that no mortality among rats escapes observation and examination and I am making further inquiry.

Mr. THOMAS BAYLEY asked the Secretary of State for the Colonies whether the Government would prevent any Chinese labourers from entering South Africa under the Chinese Labour Ordinance until the Transvaal and the rest of South Africa were declared free from bubonic plague.—Mr. LYTTELTON replied: Although since the appearance of plague at Cape Town in the beginning of 1901 South Africa has never been entirely free from bubonic plague among rodents and the latest reports in my possession show that Port Elizabeth and East London were still suffering from rat infection in February, no serious difficulty has been met with in dealing with the various slight outbreaks among human beings which have occurred in different parts of South Africa during the past three years. There is no reason to anticipate special difficulties at Johannesburg and in these circumstances I can give no undertaking to prevent the entry of Chinese labourers as soon as the Transvaal Government is advised that such introduction can take place without undue risk.

Vaccination of Pauper Children.

Mr. WEIR asked the Secretary for Scotland whether the circular letter recently issued by the Local Government Board for Scotland enjoined the compulsory vaccination of all pauper children who did not exhibit satisfactory marks of primary vaccination; whether medical officers of poorhouses were required to examine the vaccination marks of all pauper inmates of poorhouses and to revaccinate when that course seemed desirable; and whether medical officers would be instructed to keep a record of the number of inmates examined and the number revaccinated.—Mr. GRAHAM MURRAY replied: I am informed that the object of the circular was to secure that all the inmates of poor-houses should be vaccinated but the circular does not enjoin the compulsory vaccination of the class of children referred to; it recommends, but does not require, that medical officers of poorhouses should examine paupers on admission with regard to the adequacy of their protection against small-pox; it does not require compulsory revaccination. The Local Government Board has not instructed the medical officers of poorhouses to keep a record of the number of inmates examined and the number revaccinated and they prefer in the meantime to leave this to the discretion of poorhouse committees.

BOOKS, ETC., RECEIVED.

ALLEN, G. W., AND CO., 3, Wellesley-place, Calcutta.

A Manual of Medical Jurisprudence for India. By J. B. Gibbons, Lieutenant-Colonel, I.M.S., Civil Surgeon, Howrah. Price Rs.12-8 net.

ARROWSMITH, J. W., Bristol.

Anæsthetics in Surgery. Based on a Series of Two Thousand Consecutive Inductions of General Anæsthesia. By C. Hamilton Whiteford, M.R.C.S., L.R.C.P., Senior Honorary Anæsthetist to the South Devon and East Cornwall Hospital. Price 1s. 6d.

BAILLIÈRE, TINDALL, AND COX, 8, Henrietta-street, Covent-garden, W.C.

The Bacteriology of Every-day Practice. By J. Oderv Symes, M.D. (State Medicine) Lond., D.P.H., &c., Assistant Physician and Bacteriologist, Bristol General Hospital. Second edition. (Medical Monograph Series, edited by David Walsh, M.D., No. 2.) Price 2s. 6d. net.

CORNISH AND SONS, 37, Lord-street, Liverpool.

Trachoma (Granular Conjunctivitis). By Robert Reid Rentoul, M.D., late Member of the General Council of Medical Education for the United Kingdom. Price 2s. net.

DEUTICKE, FRANZ, Leipzig und Wien.

Des Kindes Ernährung, Ernährungsstörungen und Ernährungstherapie. Ein Handbuch für Aerzte. Von Prof. Ad. Czerny, Director und Dr. A. Keller, Assistent der Universitäts-Kinderklinik zu Breslau. Fünfte Abtheilung. Price M.4.50.

FISCHER, GUSTAV, Jena.

Festschrift zum Sechzigsten Geburt-stage von Robert Koch. Herausgegeben von seinen Dankbaren Schülern. Price M.20.

FROWDE, HENRY, Amen Corner, E.C.

A History of the Daubeny Laboratory, Magdalen College, Oxford. By R. T. Günther, M.A., F.L.S., Fellow and Tutor of Magdalen College. With a Preface by the President of Magdalen. Price 5s. net.

GREEN, WILLIAM, AND SONS, Edinburgh and London.

Encyclopædia Medica. Volume XIV. Index Volume. Price not stated.

HIRSCHWALD, AUGUST, Unter den Linden, 68, Berlin.

Die Nasalen Reflexneurosen und die Normalen Nasenreflexe. Von Dr. A. Kuttner. Price M.6.

HIRZEL, S., Leipzig.

Die Bekämpfung der Tuberkulose. Rede gehalten am 27 Januar, 1904, im Festsaale der Aula der Universität Tübingen. Von Professor Dr. Paul von Baumgarten. Price M.1.

HODDER AND STOUGHTON, 27, Paternoster-row, E.C.

Alcohol: its Place and Power in Legislation. By Robinson Souttar, M.A., D.C.L. Price 3s. 6d.

KARGER, S., Karlstrasse, 15, Berlin, N.W.

Fieber und Fieberbehandlung. Von Dr. Bergel, Arzt in Inowrazlaw. Price M.2.

Zur Psychopathologie des Altagslebens. (Ueber Vergessen, Versprechen, Vergreifen, Aberglaube und Irrtum.) Von Prof. Dr. Sigm. Freud in Wien. Price M.3.

MARLBOROUGH, E., AND CO., 51, Old Bailey, E.C.

Marlborough's Series of Foreign Commercial Correspondence. French and English. By A. Dudevant. Sixth edition, revised and enlarged. Edited by Toreau De Marney and C. A. Thimm. Price, paper 1s., cloth 1s. 6d.

PHILLIMORE AND CO., 124, Chancery-lane, W.C.

Sewage Disposal in Berkshire. By G. Trew Cattell, M.D., D.P.H. Cantab., Member of the Incorporated Society of Medical Officers of Health, Lecturer and Examiner in Hygiene to the School Board for London. Price 1s., by post 1s. 1d.

REDMAN, LIMITED, 129, Shaftesbury-avenue, W.C.

Biographic Clinics. Volume II. The Origin of the Ill Health of George Eliot, George Henry Lewes, Wagner, Parkman, Jane Welch Carlyle, Spencer, Whittier, Margaret Fuller Ossoli, and Nietzsche. By George M. Gould, M.D., editor of "American Medicine," author of "An Illustrated Dictionary of Medicine, Biology, &c." Price 5s. net.

Appointments.

Successful applicants for Vacancies, Secretaries of Public Institutions, and others possessing information suitable for this column, are invited to forward to THE LANCET *Office, directed to the Sub-Editor, not later than 9 o'clock on the Thursday morning of each week, such information for gratuitous publication.*

ANDERSON, T. L., M.B. Melb., has been appointed a Member of the Honorary Medical Staff of the Fremantle Public Hospital, West Australia.

ASTLES HARVEY EUSTACE, M.D St. And., has been appointed President of the Dental Board, West Australia.

BARTON, CHARLES M., L.R.C.P. Lond., M.R.C.S., has been appointed Anæsthetist to the Gordon Hospital, Vauxhall Bridge-road, S.W.

BLACKBURNE, G. H. S., M.B., Ch.B. Melb., has been appointed *pro tem.* Acting President of the Central Board of Health, West Australia.

COLELOUGH, W. FRANK, M.D., B.C. Cantab., has been appointed Medical Officer to Out-patients, Yeatman Hospital, Sherborne.

COOK, A. H., M.B. Lond., M.R.C.S., L.R.C.P. Lond., has been appointed Honorary Medical Officer to the Infants' Hospital, Hampstead, N.W.

COX, ALLASTER EDWARD, M.B. Edin., J.P., has been appointed Member of the Licensing Court for the Licensing District of Forbes, New South Wales, Australia.

HOPE, J. W., F.R.C.P. Edin., L.S.A., has been appointed *pro tem.* Acting Superintending Medical Officer at the Fremantle Lunatic Asylum, West Australia.

FULLERTON, ALEXANDER YOUNG, L.R.C.P. Lond., M.R.C.S., has been appointed Deputy Licensing Magistrate of the Licensing Court for the Licensing District of Murrurundi, New South Wales, Australia.

KELYNACK, T. N., M.D. Viet., M.R.C.P. Lond., has been appointed Honorary Physician to the Infants' Hospital, Hampstead, N.W.

LAIDLAW, J. H., M.D., has been appointed Clinical Assistant to the Chelsea Hospital for Women.

LINTON, EDWARD, L.R.C.P., L.R.C.S. Edin., L.F.P.S. Glasg., has been appointed Government Medical Officer and Vaccinator at Wellington, New South Wales, Australia.

LONGHURST, FREDERIC W., L.R.C.P. Lond., M.R.C.S., has been appointed Anæsthetist to the Gordon Hospital, Vauxhall Bridge-road, S.W.

MACLAURIN, CHARLES, M.B., M.S. Edin., has been appointed a Member of the Police Medical Board, New South Wales, Australia.

MONCKTON, WILLIAM, L.R.C.P. Edin., M.R.C.S. Eng., has been re-appointed Medical Officer of Health of Portishead (Somerset).

MORITZ, S., M.R.C.P. Lond., has been appointed Lecturer on Diseases of the Throat and Nose at the Victoria University of Manchester.

PAGE, HERBERT MARRANT, M.D. Brux., M.R.C.S., L.S.A., D.P.H. Cantab., has been appointed Medical Officer of Health of Yeovil.

STUART, HACKWORTH, M.D. Lond., D.P.H. Cantab., M.R.C.S., L.R.C.P. Lond., has been appointed Medical Adviser to the Hanley Education Committee.

Vacancies.

For further information regarding each vacancy reference should be made to the advertisement (see Index).

BEDFORD COUNTY HOSPITAL.—House Surgeon. Salary £100 per annum, with apartments, board, and laundress. Also House Physician. Salary £80 per annum, with apartments, board, and laundress.

CHESTER COUNTY ASYLUM.—Third Assistant Medical Officer, unmarried. Salary £160 per annum, with board, lodging, and washing.

EAST LONDON HOSPITAL FOR CHILDREN AND DISPENSARY FOR WOMEN, Shadwell, E.—Assistant Physician.

EAST SUFFOLK AND IPSWICH HOSPITAL.—Second House Surgeon, unmarried. Salary £80 per annum, with board, lodging, and washing.

GREAT YARMOUTH HOSPITAL.—House Surgeon. Salary £90 per annum, with board, lodging, and washing.

HOSPITAL FOR CONSUMPTION AND DISEASES OF THE CHEST, Brompton.—Resident House Physicians for six months. Honorarium of £25.

HULL, VICTORIA HOSPITAL FOR SICK CHILDREN.—Lady House Surgeon. Salary £50 per annum, with board and laundry. Also Lady Assistant House Surgeon. Salary £40 per annum, with board and laundry.

LIVERPOOL STANLEY HOSPITAL.—Senior House Surgeon. Salary £100 per annum, with board, residence, and washing.

MAIDSTONE, WEST KENT GENERAL HOSPITAL.—House Surgeon, unmarried. Salary £120, with board and residence.

MANCHESTER ROYAL INFIRMARY CONVALESCENT HOSPITAL, Cheadle.—Resident Medical Officer, unmarried. Salary £150 per annum, with board and residence.

NEWPORT AND MONMOUTHSHIRE HOSPITAL.—Junior Resident Medical Officer. Salary £70 per annum, with board, residence, and washing.

PRESTON ROYAL INFIRMARY.—Assistant House Surgeon. Salary £80 per annum, with board, washing, &c.

READING, ROYAL BERKSHIRE HOSPITAL.—Assistant Physician.

ST. MARY'S HOSPITAL FOR SICK CHILDREN, Plaistow, E.—Assistant Resident Medical Officer, unmarried, for six months. Salary at rate of £80 per annum, with board, residence, and laundry.

ST. PANCRAS AND NORTHERN DISPENSARY, 126, Euston-road.—Honorary Surgeon.

SOCIETY OF APOTHECARIES OF LONDON.—Examiner in Surgery.

STAFFORD GENERAL INFIRMARY.—Assistant House Surgeon for six months. Honorarium of £40, with board, residence, &c.

ROYAL WATERLOO HOSPITAL FOR CHILDREN AND WOMEN, Waterloo-road, S.E.—Resident Medical Officer.

WEST LONDON HOSPITAL, Hammersmith-road, W.—House Surgeon. Board, lodging, and laundry.

Births, Marriages, and Deaths.

BIRTHS.

BEEGLING.—On March 22nd, at Huddersfield, the wife of D. N. Beegling, B.A., M.B., C.M., of a son.

BENSON.—On March 19th, at The Elms, Steeple Claydon, Bucks, the wife of P. L. Benson, M.A., M.D., of a son.

HUNTER WOODS.—On March 21st, at Essendene, New Milton, S. Hants, the wife of H. Hunter Woods, M.R.C.S., D.P.H., of a daughter.

LANDER.—On March 22nd, at Hathersage, Derbyshire, the wife of H. W. G. Lander, M.B., of a son.

ROBERTS.—On March 23rd, at South Eaton-place, S.W., the wife of Edward A. Roberts, M.D., of a daughter.

MARRIAGES.

CRAWSHAW—RADFORD.—On March 24th, at New College Chapel, Upper Avenue-road, N.W., Ernest John Crawshaw, M.R.C.S. Eng., L.R.C.P. Lond., to Cicely Kate, third daughter of George Radford, M.A.

WOOD—BROOKER.—On March 26th, at St. George's Church, Bloomsbury, Thomas James Wood, M.D., to Edith Isabel, second daughter of the late J. W. Brooker.

DEATH.

RICHARDS.—On March 22nd, at Freeland-road, Baling, W. Joseph Peeke Richards, M.R.C.S., L.S.A., aged 73 years, late Medical Superintendent at the London County Asylum, Hanwell.

N.B.—A fee of 5s. is charged for the insertion of Notices of Births, Marriages, and Deaths.

Notes, Short Comments, and Answers to Correspondents.

A BOGUS AMERICAN UNIVERSITY.

A PERSON named Mather, styling himself "Financial Secretary and General Agent for the American College of Law and Washington University," has written to members of the English medical profession and doubtless to other professional gentlemen in the following terms:—

> AMERICAN COLLEGE OF LAW AND WASHINGTON UNIVERSITY, Washington, D.C. Chartered under Act of Congress. William M. Farr, L.L.D., President. E. Mather, A.M., M.D., L.L.D., Financial Secretary and General Agent. P. O. Box 223, Detroit, Mich.
>
> *Corporate Departments.*—The American College, the American Law School, American Business College, American Shorthand College, American Normal College, American College of Music, American College of Oratory, American College of Diplomacy, American College of Journalism, American College of Literature, American College of Divinity, American College of Dentistry, American College of Medicine, American College of Pharmacy, American College of Government, American Correspondence Colleges.
>
> Detroit, Mich., March 11th, 1904.
>
> MY DEAR SIR,—Having your name before me, and knowing your Professional standing, I am desirous of drawing your attention to the following Colleges, and, if I can be of service, in any way, it will please me to have a communication, as our departments are in Science, Art, Law, and Medicine, etc., I am sure I can interest any such persons in various ways.
>
> We have a first-class University in all respects, as you will see and, one which the student may be justly proud of, located at the National Capitol, Washington, D.C., this should be sufficient guarantee regarding its standing among our best Institutions of Learning in this Country. Washington is a very pleasant and beautiful City, with all the surroundings for health and comfort that a student can desire, and, where over half a million people visit annually.
>
> A Journal is published by the law department and is mailed to subscribers at a nominal cost of one dollar per year throughout the United States and one dollar and fifty cents in Foreign Countries.
>
> I enclose a slip, which will explain for itself to men of distinction, and at the same time soliciting correspondence from students: and those desirous of the standing and an explanation of both Institutions of Learning, would do well to remit one year's subscription.
>
> An early reply from you, will be greatly appreciated. I am,
>
> Very respectfully yours,
>
> E. MATHER.

We need hardly say that Mather is practically a writer of begging letters and that the institution with the long-winded title in whose behalf he acts is the usual bogus university. The slip which Mather encloses runs as follows:—

> If you are desirous of any honorary degree, I may be of service to you, as our law department issues to men of distinction the Degrees of L.L.B., L.LM., D.C.L., and L.L D., but these men must fill in a record of data signifying their standing and giving any works or write-ups in which they have a distinction. I will be happy to hear from you, and will send, if required, the necessary documents to be filled in as this College is up to date and legally chartered as you will see by the enclosed letter-head. If you are interested and desire to see the announcement, send one dollar for subscription for one years legal Journal. Foreign Subscriptions, one dollar and fifty cents.

We cannot think that any medical man would be so absolutely short-sighted as to put any trust in Mather's representations. He is simply hunting for 1 dollar and 50 cents as a foreign "subscription for one year's *Legal Journal*" with the hope of being able to extract a larger sum from persons weak enough to desire to obtain the letters of an honorary doctorate to their name. The flam is so obvious that we should not waste space upon cautioning our readers in the matter were it not that we have heard of persons who have replied to Mather as if he were a serious and honourable person (neither of these persons was a medical man). We do not, by the way, think much of the ingenuity of Mather's designs upon the British purse. What does it matter to a person in England if the "first-class university" is "located at the National Capitol, Washington, D.C. ..... a very pleasant and beautiful city"? And how does the financial secretary and general agent of a first-class university in Washington come to discharge his duties from "P.O. Box 223, Detroit, Mich."? Mather would seem to possess the impulses of roguery but to be scantily endowed with the astuteness that makes for success.

CHEAP CREDIT *v.* USURY: A NATIONAL SCHEME.

WE have received from Mr. Thomas Farrow of 57, Gracechurch-street, E.C., who is the author of "The Money-lender Unmasked," a letter in which he informs us that in connexion with his proposed National Credit Institution for the suppression of 60 per cent. money-lending and its attendant evils he has, in conjunction with the best known men of the day, registered a people's bank under the Industrial and Provident Societies Act and has received the necessary certificate from the chief registrar of friendly societies. The bank has been empowered to open a central establishment in London and to found branches throughout the kingdom. The share capital, says Mr. Farrow, has been arranged so that even a working man can become a shareholder by the investment of £1, payable by instalments, and so as to prevent the bank from falling into the hands of large capitalists the holding of any individual shareholder cannot exceed £200. 5 per cent. dividend is guaranteed on shares and 3½ per cent. on deposits. The institution will be managed by men specially qualified for the purpose and no ornamental person will find a place on the board. The success of the scheme largely depends upon the prompt co-operation of the public which is invited. We cannot commen particularly upon the scheme until we learn more details but we can well imagine the difficulties of such a business, as there are some people "clever" enough even to defraud keen money-lenders, and if a low rate of interest is charged it will not allow for many serious losses. We have no doubt that Mr. Farrow will take care that the individual shareholder whole holding may not exceed £200 is not the nominee of a large capitalist whom the bank desires to keep outside. There is no question whatever that institutions are wanted from which a struggling and respectable tradesman or professional man may in an emergency obtain a small loan of £20 to £50 without falling into the hands of a vampire, and if Mr. Farrow can provide such institutions upon practical lines we wish him success.

A STORY OF ELECTRICITY.

A CORRESPONDENT writing in the *Scientific American* of March 19th describes some phenomena unusual in the United Kingdom. He says:—

> I have been called on to investigate a peculiar case which has puzzled me and I would ask your advice on the same. The case in question is a house which seems to be a veritable frictional machine. By walking on the carpet a spark can be produced by bringing the finger near any metal substance, whether grounded or not, such as a brass tack in furniture, picture frames, &c. If this condition existed to a small extent nothing would be said, but it is to such an extent as to be very objectionable. The house is heated by a hot-air furnace and everything about the house is very dry. I have suggested keeping water pan in furnace constantly filled with water, as I believe that the moisture produced will tend to allow the charge to neutralise itself. Two persons coming in contact with each other produce a spark. Can you suggest a remedy for this?

THE PRICE OF A HOSPITAL.

To the Editors of THE LANCET.

SIRS,—Would any of your readers be kind enough to give the approximate cost per bed of a thoroughly up-to-date hospital of 50 beds, including out-patient department and offices, the site being given? I am, Sirs, yours faithfully,

March 24th, 1904. M.B., B.C.

A CRYPTIC ASPECT OF THE CRY OF PAIN.

To the Editors of THE LANCET.

SIRS,—Would you kindly allow me to ask through the medium of THE LANCET for references to any reports or observations in any European language on a rather cryptic aspect of the cry of pain? Not the aspect which is made so much of in current literature, of a relief from a nervous strain, or the aspect of a communication to others—i.e., as a cry of distress, a cry for help; I mean its purely afferent aspect, the value, namely, that the cry of pain possesses in consequence of reaching the ear of the sufferer who utters it. Thanking you in anticipation, I am, Sirs, yours faithfully,

March 24th, 1904. PSYCHOLOGUS.

THE BRITISH WEATHER CHART FOR 1904.

WE have received from the publishers, Messrs. R. Morgan and Co., 65, Westow-street, Norwood, S.E., a copy of the British Weather Chart for 1904, which has been compiled by Mr. B. P. Jenkins, F.R.A.S. The chart sets out the thermometrical and barometrical forecasts for the whole year and under the heading of each month prognosticates the general condition of the weather, the prevailing winds and temperature, and the average rain, while dates are given round which it is suggested particular falls in the temperature or falls of rain may be expected to appear. Of course, no prophet can expect to be praised till after his prophecies have been found true, so that we only commend Mr. Jenkins's work to our readers in a modified manner, but we may say, firstly, that his tracings are perfectly easy to comprehend, secondly that his prophecies have been accurate more or less for the first quarter of the year, and thirdly that there is nothing Delphic about his utterances—he does not "hedge" or use ambiguous terms. He definitely states, for example, that the weather will be cold round the 10th and the 22nd of April and that the rainfall during the month now commencing will be below the average, occurring chiefly on the 4th, round the 8th, and on the 14th and 20th. If the next few weeks prove Mr. Jenkins to have been right in his vaticinations we shall regard the chart with considerable reverence for the rest of the year. The price of the chart is 6½*d.*

THE MEDICAL OFFICER OF NO. 2 DISTRICT OF BARNSLEY UNION.

SOME difficulty has apparently arisen in connexion with the appointment of a medical officer for the No. 2 district of the Barnsley union. The circumstances are these. In March, 1903, Dr. Andrew Thomson and Dr. Arthur E. White were candidates for the post and the latter was appointed for one year only. This limitation in time of the appointment, which is contrary to precedent but which was acquiesced in by the Local Government Board, was apparently made in order that Mr. O. F. Rowley, the former holder of the post, might continue to hold the office of public vaccinator for another year and so obtain the vaccination grant. At the beginning of March, 1904, the appointment was advertised and Dr. Thomson was appointed. The Local Government Board, however, has not yet ratified the appointment. It seems to us that the guardians have acted somewhat hardly in ignoring Dr. White's claim for reappointment. He has done the work of the post for a year and no complaints seem to have been made as to the manner in which he carried out his work. The guardians are, of course, within their legal right in appointing Dr. Thomson, but we think that Dr. White had certainly a moral claim to the post. From a copy of Dr. Thomson's application and testimonials which lies before us we see that he submitted four testimonials from non-medical men.

WANTED—A HOME.

To the Editors of THE LANCET.

SIRS,—In reply to an inquiry in THE LANCET of March 26th, p. 906, as to a home for a semi-imbecile boy aged seven years, allow me to say that the Royal Albert Asylum, Lancaster, now described as a "training school for the feeble-minded of the northern counties," receives cases of the poorer class at 25 guineas per annum without election. Applications should be made to the principal and secretary, Mr. J. Diggens.

I am, Sirs, yours faithfully,

March 26th, 1904. G. E. S.

"N" RAYS AND THE NERNST LAMP.

THE Nernst electric lamp has been twice mentioned in THE LANCET recently, in an annotation which appeared in our columns on March 26th, p. 889, dealing with the "n" rays and the more newly discovered "n_1" rays and in a letter from Mr. A. A. Campbell Swinton published in THE LANCET of March 5th, p. 685. These rays have been discovered by M. Blondlot to be emitted by the Nernst electric lamp and a short description of this lamp may therefore be of interest to our readers. The principle of the lamp was invented by Professor Walther Nernst of the University of Göttingen in 1898, but since that time many experiments have been necessary in order to perfect the invention and to make it a really practical lamp for public use. A paper was read on the lamp at a meeting of the Society of Arts held on Feb. 8th, 1899, by Mr. James Swinburne, M.I.C.E., vice-president of the Institution of Electrical Engineers, London, and a full report of the paper, which also included some interesting remarks on the Auer or Welsbach mantle, was published in the journal of the Society of Arts dated Feb. 10th, 1899. These remarks are interesting as M. Blondlot has also found the "n" rays to be given off by these incandescent gas mantles. To make the illuminating filament or rod of the Nernst lamp Professor Nernst took some highly refractory oxides or so-called "rare earths" as his material, chiefly zirconia, we believe, and the material was worked up into little white rods of about the size of an ordinary pin. Each rod was mounted on two platinum wires and a little paste made of refractory oxides was applied to the joints. The little rod or filament with its two wires was then mounted in a holder which fitted ordinary electric-light fittings. Highly refractory oxides are notoriously good insulators at normal temperature but such insulators are electrolytes when hot. Therefore in order to make the rods conduct well they have first to be heated to from 600° to 800° C. when they incandesce and yield a beautiful white light of great economy. This heating of the rod is done by means of a "heater" spiral which is either made of kaolin wound with platinum wire or of a particular resistance material made of graphite and clay or some other substances. This open spiral travels around the whole length of the rod but does not touch it. In the "Luna" Nernst lamp (the newest type) the rod is outside the "heater" and thus shadows are obviated. When the switch is turned on the heater spiral becomes red hot and heats the straight rod in the centre up to the temperature at which it conducts well whereupon it emits a brilliant light and the heater spiral is simultaneously cut out of circuit. The lamp is also supplied with a steadying resistance consisting of an iron wire in an exhausted glass tube but this is inclosed with the automatic cut-out apparatus in the upper part of the lamp and is not usually visible. The resistance and burner, which latter has a life of about 600 hours, can be replaced and renewed from time to time without damage to the remaining parts of the lamp. This electric lamp practically will not work in a vacuum and a peculiar feature is that it may be lighted with a match or a spirit lamp—that is, the small illuminating rod may be heated up by such means to overcome its normal resistance and to make it conduct electrically. The watt consumption per candle-power of the Nernst lamp varies from 0·88 to 1·70, while that of the ordinary incandescent vacuum lamp with its carbonised vegetable filament so familiar to all varies from 2·50 to 4 watts per candle-power according to the efficiency at which it works, so that incidentally the saving of current in favour of the Nernst lamp is considerable. The clock tower of the Houses of Parliament is illuminated by these lamps and the Canadian arch was brilliant with them at the time of the Coronation festivities, while they have recently been installed in many shops and offices in the United Kingdom, on the continent, and in the United States of America and may conveniently be seen in many of the Aerated Bread Company's shops in London where they have recently been installed. The lamp can be bought in London from the Electrical Company, Limited, 122, Charing Cross-road, W.C.

THE PIED PIPER OF HAMELIN: A SUGGESTED ORIGIN OF THE LEGEND.

To the Editors of THE LANCET.

SIRS,—No adequate explanation of the famous legend of the Pied Piper has hitherto been offered, so far as I am aware, though an attempt has been made to connect it with the child-crusades which were inaugurated when the word went forth that the Holy Sepulchre was recoverable to Christianity by the pure and innocent in heart. But this interpretation cannot be maintained, for the child-crusades took place in the twelfth and not in the thirteenth century, to which latter period the episode of the Pied Piper is very definitely ascribed. Yet that it records, under the guise of a fairy tale, some historical event, is certain, for the actual date, June 26th, 1284, is inscribed on the wall of an ancient house in the town and the municipal archives are dated from the calamity. Grimm has collected a list of authorities who speak of the event as an historical fact. (Baring Gould: Curious Myths of the Middle Ages. The date given in Browning's poem differs for some reason.)

The story, of course, is an adaptation of the ancient world-myth, current among diverse races, of the magic music compelling all who heard to follow. In its present application it tells of a mediæval mid-European town infested with rats. A magician appears who entices the rats into the river and then, out of revenge for the parsimony of the citizens, beguiles the children into a chasm which gapes without the gates.

The explanation I would suggest is that this legend records a visitation of plague to Hamelin. Acting on this supposition we find the antecedent mortality among the rats which, thanks to the unhygienic habits of the citizens, had hitherto swarmed in the town. It may even be that some travelling magician had acquired the art of inoculating the rats with a disease which he had not learnt to connect with pestis major. The dead rats are cast into the river Weser and then follows an outbreak of the Black Death, the mortality from some local cause being greatest among the children and their corpses being borne along the Bungen-strasse—

> "Where anyone playing on pipe or tabor
> Was sure for the future to lose his labour,
> Nor suffered they hostelry or tavern
> To shock with mirth a street so solemn"—

to the plague-pit dug in the mountain-side without the city. The date fixed for the disappearance of the children would perhaps be the occasion of finally filling in the pit after the staying of the pestilence. The thirteenth century was the century of the "Black Death"—wave after wave ravaged Europe. 1284 was not one of the great plague years but in the intermediate periods there were frequent more or less localised outbreaks.

I am, Sirs, yours faithfully,

J. S. MACKINTOSH, M.R.C.S. Eng., L.R.C.P. Lond.

Hampstead, March 22nd, 1904.

LEGAL v. MEDICAL ETIQUETTE.

To the Editors of THE LANCET.

SIRS,—A few days ago a respectably dressed man applied to a London magistrate for advice with respect to his property. The magistrate at once rebuked him and told him to apply to a respectable solicitor who if necessary would instruct a barrister. How low is the standard of the medical profession towards its poorer practitioners. Here you have the leaders of the profession giving their advice gratuitously to thousands well able to pay the poor practitioner. In some of the London hospitals they have to my mind reached the lowest level—they charge 3*d.* a bottle to last a week, and yet these men propose a Bill to prevent their poorer brethren from prescribing and selling a bottle of medicine for 6*d.*

It is too disgusting and should make physicians and surgeons of good class withdraw their services from such institutions. To the indigent poor the relief is honourable but to the respectable lower middle class at 3*d.* a bottle is a disgrace to any honourable man, unless he is starving, connected with any profession.

I believe there is a step lower in the east-end where a medico carries on a pseudo-charitable religious institution and gives advice and medicine for a penny a week.

I scarcely believe the bulk of medical men in England have any knowledge of these facts nor the free-giving benefactors to these institutions.

I trust you will allow it to be brought to their notice.

I am, Sirs, yours faithfully,

March 28th, 1904. M.R.C.S., L.R.C.P.

Nemo.—(1) The value varies according to the amount of opposition, the length of introduction, the possibility of a transference of appointments, &c.; (2) special arrangements to meet the contingency of the sickness, total incapacity, or death of one of the partners should always be made in the agreement.

T. G. R.—We consider that the circular note in question may be sent.

Medical Diary for the ensuing Week.

OPERATIONS.

METROPOLITAN HOSPITALS.

MONDAY (4th).—London (2 P.M.), St. Bartholomew's (1.30 P.M., St. Thomas's (3.30 P.M.), St. George's (2 P.M.), St. Mary's (2.30 P.M.), Middlesex (1.30 P.M.), Westminster (2 P.M.), Chelsea (2 P.M.), Samaritan (Gynæcological, by Physicians, 2 P.M.), Soho-square (2 P.M.), Royal Orthopædic (2 P.M.), City Orthopædic (4 P.M.), Gt. Northern Central (2.30 P.M.), West London (2.30 P.M.), London Throat (9.30 A.M.), Royal Free (2 P.M.), Guy's (1.30 P.M.).

TUESDAY (5th).—London (2 P.M.), St. Bartholomew's (1.30 P.M.), St. Thomas's (3.30 P.M.), Guy's (1.30 P.M.), Middlesex (1.30 P.M.), Westminster (2 P.M.), West London (2.30 P.M.), University College (2 P.M.), St. George's (1 P.M.), St. Mary's (1 P.M.), St. Mark's (2.30 P.M.), Cancer (2 P.M.), Metropolitan (2.30 P.M.), London Throat (9.30 A.M.), Royal Ear (3 P.M.), Samaritan (9.30 A.M. and 2.30 P.M.), Throat, Golden-square (9.30 A.M.), Soho-square (2 P.M.), Chelsea (2 P.M.).

WEDNESDAY (6th).—St. Bartholomew's (1.30 P.M.), University College (2 P.M.), Royal Free (2 P.M.), Middlesex (1.30 P.M.), Charing Cross (3 P.M.), St. Thomas's (2 P.M.), London (2 P.M.), King's College (2 P.M.), St. George's (Ophthalmic, 1 P.M.), St. Mary's (2 P.M.), National Orthopædic (10 A.M.), St. Peter's (2 P.M.), Samaritan (9.30 A.M. and 2.30 P.M.), Gt. Ormond-street (9.30 A.M.), Gt. Northern Central (2.30 P.M.), Westminster (2 P.M.), Metropolitan (2.30 P.M.), London Throat (9.30 A.M.), Cancer (2 P.M.), Throat, Golden-square (9.30 A.M.), Guy's (1.30 P.M.).

THURSDAY (7th).—St. Bartholomew's (1.30 P.M.), St. Thomas's (3.30 P.M.), University College (2 P.M.), Charing Cross (3 P.M.), St. George's (1 P.M.), London (2 P.M.), King's College (2 P.M.), Middlesex (1.30 P.M.), St. Mary's (2.30 P.M.), Soho-square (2 P.M.), North-West London (2 P.M.), Gt. Northern Central (Gynæcological, 2.30 P.M.), Metropolitan (2.30 P.M.), London Throat (9.30 A.M.). St. Mark's (2 P.M.), Samaritan (9.30 A.M. and 2.30 P.M.), Throat, Golden-square (9.30 A.M.), Guy's (1.30 P.M.).

FRIDAY (8th).—London (2 P.M.), St. Bartholomew's (1.30 P.M.), St. Thomas's (3.30 P.M.), Guy's (1.30 P.M.), Middlesex (1.30 P.M.), Charing Cross (3 P.M.), St. George's (1 P.M.), King's College (2 P.M.), St. Mary's (2 P.M.), Ophthalmic (10 A.M.), Cancer (2 P.M.), Chelsea (2 P.M.), Gt. Northern Central (2.30 P.M.), West London (2.30 P.M.), London Throat (9.30 A.M.), Samaritan (9.30 A.M. and 2.30 P.M.), Throat, Golden-square (9.30 A.M.), City Orthopædic (2.30 P.M.), Soho-square (2 P.M.).

SATURDAY (9th).—Royal Free (9 A.M.), London (2 P.M.), Middlesex (1.30 P.M.), St. Thomas's (2 P.M.), University College (9.15 A.M.), Charing Cross (2 P.M.), St. George's (1 P.M.), St. Mary's (10 P.M.), Throat, Golden-square (9.30 A.M.), Guy's (1.30 P.M.).

At the Royal Eye Hospital (2 P.M.), the Royal London Ophthalmic (10 A.M.), the Royal Westminster Ophthalmic (1.30 P.M.), and the Central London Ophthalmic Hospitals operations are performed daily.

SOCIETIES.

WEDNESDAY (6th).—OBSTETRICAL SOCIETY OF LONDON (20, Hanover-square, W.).—8 P.M. Specimens will be shown by Dr. W. H. Tate, Dr. Horrocks, Mr. Bland-Sutton, and Dr. Handfield-Jones. Short Communication:—Lieutenant-Colonel Sturmer, I.M.S.: 41 Cases of Puerperal Eclampsia Treated by Thyroid Extract. Paper:—Dr. R. H. Bell: Torsion of the Pedicle in Hydrosalpinx and other Morbid Conditions of the Fallopian Tube.

THURSDAY (7th).—RÖNTGEN SOCIETY (20, Hanover-square, W.).—8.30 P.M. Exhibition Evening. Exhibition of Novel Apparatus by Different Makers.

FRIDAY (8th).—THE INCORPORATED SOCIETY OF MEDICAL OFFICERS OF HEALTH (9, Adelphi-terrace, Strand, W.C.).—8 P.M. Council Meeting. Paper:—Dr. J. Howard-Jones: The Control of Measles Epidemics.

WEST LONDON MEDICO-CHIRURGICAL SOCIETY.—8 P.M. Clinical Evening. Cases will be shown by Dr. S. Taylor, Dr. Ball, Dr. Saundes, Mr. Lunn, Mr. Paton, Mr. Pardoe, and others.

LARYNGOLOGICAL SOCIETY OF LONDON (20, Hanover-square, W.).—5 P.M. Cases, Specimens, &c., will be shown by Dr. StClair Thomson, Mr. P. de Santi, Dr. L. Lack, Mr. H. Tod, Dr. H. Tilley, and others.

EDITORIAL NOTICES.

It is most important that communications relating to the Editorial business of THE LANCET should be addressed *exclusively* "TO THE EDITORS," and not in any case to any gentleman who may be supposed to be connected with the Editorial staff. It is urgently necessary that attention be given to this notice.

It is especially requested that early intelligence of local events having a medical interest, or which it is desirable to bring under the notice of the profession, may be sent direct to this office.

Lectures, original articles, and reports should be written on one side of the paper only, AND WHEN ACCOMPANIED BY BLOCKS IT IS REQUESTED THAT THE NAME OF THE AUTHOR, AND IF POSSIBLE OF THE ARTICLE, SHOULD BE WRITTEN ON THE BLOCKS TO FACILITATE IDENTIFICATION.

Letters, whether intended for insertion or for private information, must be authenticated by the names and addresses of their writers—not necessarily for publication.

We cannot prescribe or recommend practitioners.

Local papers containing reports or news paragraphs should be marked and addressed "To the Sub-Editor."

Letters relating to the publication, sale and advertising departments of THE LANCET *should be addressed "To the Manager."*

We cannot undertake to return MSS. not used.

MANAGER'S NOTICES.

TO SUBSCRIBERS.

Will Subscribers please note that only those subscriptions which are sent direct to the Proprietors of THE LANCET at their Offices, 423, Strand, W.C., are dealt with by them? Subscriptions paid to London or to local newsagents (with none of whom have the Proprietors any connexion whatever) do not reach THE LANCET Offices, and consequently inquiries concerning missing copies, &c., should be sent to the Agent to whom the subscription is paid, and *not* to THE LANCET Offices.

Subscribers, by sending their subscriptions direct to THE LANCET Offices, will ensure regularity in the despatch of their Journals and an earlier delivery than the majority of Agents are able to effect.

The rates of subscriptions, post free, either from THE LANCET Offices or from Agents, are:—

FOR THE UNITED KINGDOM.		TO THE COLONIES AND ABROAD.	
One Year	£1 12 6	One Year	£1 14 8
Six Months	0 16 3	Six Months	0 17 4
Three Months	0 8 2	Three Months	0 8 8

Subscriptions (which may commence at any time) are payable in advance. Cheques and Post Office Orders (crossed "London and Westminster Bank, Westminster Branch") should be made payable to the Manager, MR. CHARLES GOOD, THE LANCET Offices, 423, Strand, London, W.C.

SUBSCRIBERS ABROAD ARE PARTICULARLY REQUESTED TO NOTE THE RATES OF SUBSCRIPTIONS GIVEN ABOVE. It has come to the knowledge of the Manager that in some cases higher rates are being charged, on the plea that the heavy weight of THE LANCET necessitates additional postage above the ordinary rate allowed for in the terms of subscriptions. Any demand for increased rates, on this or on any other ground, should be resisted. The Proprietors of THE LANCET have for many years paid, and continue to pay, the whole of the heavy cost of postage on overweight foreign issues; and Agents are authorised to collect, and do so collect, from the Proprietors the cost of such extra postage.

The Manager will be pleased to forward copies direct from the Offices to places abroad at the above rates, whatever be the weight of any of the copies so supplied. Address—THE MANAGER, THE LANCET OFFICES, 423, STRAND, LONDON, ENGLAND.

METEOROLOGICAL READINGS.

(Taken daily at 8.30 a.m. by Steward's Instruments.)

THE LANCET Office, March 30th, 1904.

Date.	Barometer reduced to Sea Level and 32° F.	Direction of Wind.	Rainfall.	Solar Radiation in Vacuo.	Maximum Temp. Shade.	Min. Temp.	Wet Bulb.	Dry Bulb.	Remarks at 8.30 A.M.
Mar. 24	30·33	E.	...	78	48	39	41	43	Cloudy
,, 25	29·98	E.	0·02	48	42	37	38	39	Raining
,, 26	30·05	E.	0·04	61	45	38	39	40	Overcast
,, 27	30·28	N.E.	...	62	47	39	39	40	Overcast
,, 28	30·21	S.W.	...	85	51	38	39	40	Overcast
,, 29	29·66	S.W.	0·19	90	54	40	44	46	Cloudy
,, 30	29·32	W.	0·33	71	45	35	36	39	Cloudy

During the week marked copies of the following newspapers have been received: *Aberdeen Free Press, Daily Mail, Darlington and Stockton Times, Daily News, Daily Chronicle, Hull and Lincolnshire Times, Westminster Gazette, Leeds and Yorkshire Mercury, South Bucks Free Press, Guernsey Star, Hertfordshire Mercury, Standard, South Wales Daily News, Surrey Advertiser, Coventry Herald, Birmingham Daily Mail, Reading Mercury, Mining Journal, Local Government Chronicle, Liverpool Courier, Westminster Gazette, Pall Mall Gazette, Irish Times (Weekly), &c.*

Communications, Letters, &c., have been received from—

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Letters, each with enclosure, are also acknowledged from—

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